

**ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND
DEPRESSION WITH BODY DYSMORPHIC DISORDER AMONG
UTAR UNDERGRADUATE STUDENTS**

By

PHUA JIA YING

A Project Report Submitted to the Department of Allied Health Sciences

Faculty of Science

Universiti Tunku Abdul Rahman

In Partial Fulfillment of the Requirement for the

Degree of Bachelor of Science (Hons) Dietetics

May 2023

ABSTRACT

ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND DEPRESSION WITH BODY DYSMORPHIC DISORDER AMONG UTAR UNDERGRADUATE STUDENTS

PHUA JIA YING

Body dysmorphic disorder (BDD) is a commonly underrecognized body image disorder that is associated with high occurrence of delusional symptoms and suicidal action. Recently, BDD is shown to have an increasing prevalence among university students, with observed depressive symptoms. On the other hand, physical activity is proven to be effective in treating depressive symptoms. Therefore, a cross-sectional study was conducted to study the association between physical activity and depression with BDD among Universiti Tunku Abdul Rahman (UTAR) undergraduate students. In this study, validated questionnaires such as Body Image Disturbance Questionnaire (BIDQ), International Physical Activity Questionnaire - Short Form (IPAQ-SF), and Depression, Anxiety and Stress Scale - 21 Items (DASS-21) were used. Data was collected physically. In terms of statistical analysis, descriptive analysis was used, and the data were expressed as frequency and percentage. In addition, Chi-square test was used to determine association between physical activity and depression with BDD. A total of 106 respondents has been participated in the study, with the inclusion of 70 females (66%), and 36 males (34%). Based on

the results, the prevalence of BDD among UTAR undergraduate students was 4.7%, while depression prevalence was 43.3%. Most of the students were physically active, with a percentage of 58.5%. The major body area of concern included skin (26.8%), body size (25.3%) and hair (15.3%). This study found a significant association between depression and BDD ($p < 0.001$). However, there was no association between physical activity and BDD ($p = 0.896$). In conclusion, a significant association was found between depression and BDD. Future studies should be conducted to study how depression can affect BDD to provide references for more effective intervention in preventing BDD in the future.

ACKNOWLEDGEMENT

First and foremost, I would like to dedicate my sincere appreciation to my supervisor, Dr. Chang Sui Kiat for his guidance, advice and full support throughout the whole final year project. I am grateful for the patience and gracious of my supervisor spending his precious time in helping me to finish my project successfully, despite his hectic schedule. He is a calm supervisor with a strong sense of responsibility that keeps on providing and teaching me new and valuable knowledge. Other than that, I would also like to thank the panellists for their time to provide useful recommendations that helps to refine my research project.

Apart from that, I would like to express my appreciation to my groupmates, Ng Jia Poh and Chong Wan Lin in providing useful advice and assist me throughout the data collection process. Besides, special thanks to my family and friends for always be by my side, being supportive and caring and provide genuine advices. Lastly, I would like to thank all the participants who are willing to spend the time to participate in my study.

DECLARATION

I hereby declare that this project report is based on my original work except for quotations and citations which have been duly acknowledge. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.



(PHUA JIA YING)

APPROVAL SHEET

The project report entitled “**ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND DEPRESSION WITH BODY DYSMORPHIC DISORDER AMONG UTAR UNDERGRADUATE STUDENTS**” was prepared by PHUA JIA YING and submitted as partial fulfilment of the requirements for the degree of Bachelor of Science (HONS) Dietetics at Universiti Tunku Abdul Rahman.

Approved by:



(Dr Chang Sui Kiat)

Date: 30th May 2023

Supervisor

Department of Chemical Science

Faculty of Science

Universiti Tunku Abdul Rahman

FACULTY OF SCIENCE

UNIVERSITI TUNKU ABDUL RAHMAN

Date: 30th May 2023

PERMISSION SHEET

It is hereby certified that **PHUA JIA YING** (ID No: **19ADB01815**) has completed this final year project entitled “**ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND DEPRESSION WITH BODY DYSMORPHIC DISORDER AMONG UTAR UNDERGRADUATE STUDENTS**” supervised by Dr. Chang Sui Kiat from the Department of Allied Health Sciences, Faculty of Science

I hereby give permission to the University to upload the softcopy of my final year project in pdf format into the UTAR Institutional Repository, which be made accessible to the UTAR community and public.

Yours truly,



(PHUA JIA YING)

TABLE OF CONTENTS

	Page
ABSTRACT	ii
ACKNOWLEDGEMENTS	iv
DECLARATION	v
APPROVAL SHEET	vi
PERMISSION SHEET	vii
TABLE OF CONTENTS	viii
LIST OF FIGURES	xi
LIST OF TABLES	xii
LIST OF ABBREVIATIONS	xiv

CHAPTER

1.	INTRODUCTION	1
1.1	Background	1
1.2	Problem Statement	3
1.3	Significance of Study	3
1.4	Objectives	5
1.4.1	General Objective	5
1.4.2	Specific Objectives	5
1.5	Hypothesis	6
2.	LITERATURE REVIEW	7
2.1	Body Dysmorphic Disorder	7
2.1.1	Prevalence of BDD	8
2.1.2	Body Area of Concerns	10
2.1.3	Impact of BDD	10
2.2	Physical Activity	11
2.2.1	Physical Activity Level Among University Students	13
2.2.2	Physical Activity and BDD	14

2.3	Depression	15
2.3.1	Prevalence of Depression Among University Students	16
2.3.2	Depression and BDD	17
3.	METHODOLOGY	19
3.1	Study Design	19
3.2	Sample Size Calculation	19
3.3	Selection Criteria	21
3.3.1	Inclusion Criteria	21
3.3.2	Exclusion Criteria	21
3.4	Sampling Method	21
3.5	Research Instruments	21
3.5.1	Sociodemographic Profile	22
3.5.2	Prevalence of BDD	22
3.5.3	Physical Activity Questionnaire	24
3.5.4	Depression Questionnaire	26
3.6	Data Collection	27
3.7	Statistical Analysis	28
4.	RESULTS	29
4.1	Sociodemographic Profile	29
4.1.1	Gender	29
4.1.2	Age	30
4.1.3	Faculty	31
4.2	Body Dysmorphic Disorder Questionnaire	32
4.2.1	BDD Questionnaire	32
4.2.2	Body Area of Concern	38
4.3	Depression Questionnaire	39
4.4	BDD, PA and Depression Among Undergraduate Student	42
4.4.1	BDD	42
4.4.2	Physical Activity	43
4.4.3	Depression	44
4.5	Association Between BDD with Physical Activity and Depression	45
4.5.1	Association Between BDD with Physical Activity	45
4.5.2	Association Between BDD with Depression	46

5.	DISCUSSION	47
5.1	Prevalence of BDD Among UTAR Undergraduate Students	47
5.2	Body Area of Concern	49
5.3	Physical Activity Level among UTAR Undergraduate Students	51
5.4	Depression Level among UTAR Undergraduate Students	53
5.5	Association of PA and Depression with BDD	56
5.5.1	Association of BDD with Physical Activity	56
5.5.2	Association of BDD and Depression	59
5.6	Strengths and Limitations	61
5.7	Recommendations for future studies	62
6.	CONCLUSION	63
	REFERENCES	64
	APPENDICES	76

LIST OF TABLES

Table		Page
2.1	Prevalence of BDD Among University Students	9
2.2	Physical Activity Level Among University Students in Malaysia	14
2.3	Prevalence of Depression Among University Students	17
3.1	Formula to Calculate Median-MET Minutes	24
3.2	Criteria for Physical Activity Categories	25
3.3	Depression Severity According to Scores	27
4.1	Distribution of Respondents According to Gender	29
4.2	Distribution of Respondents According to Age	30
4.3	Distribution of Respondents According to Faculty	31
4.4	Distribution of Respondents According to Statements in BDD Questionnaire	35
4.5	Body Area of Concern Among Undergraduate Students	38
4.6	Distribution of Respondents According to Statements in Depression Questionnaire	41
4.7	Percentage of BDD Among Undergraduate Students	42
4.8	Physical Activity Level Among Undergraduate Students	43
4.9	Depression Level Among Undergraduate Students	44
4.10	Association Between BDD with Physical Activity	45
4.11	Association Between BDD with Depression	46

LIST OF FIGURES

Figure		Page
4.1	Percentage Analysis for Gender	29
4.2	Percentage Analysis for Age	30
4.3	Percentage Analysis for Faculty	32
4.4	Percentage Analysis for Body Area of Concern	39
4.5	Prevalence of BDD	42
4.6	Physical Activity Level Among Undergraduate Students	43
4.7	Depression Level Among Undergraduate Students	44

LIST OF ABBREVIATIONS

BDD	Body dysmorphic disorder
BDDQ	Body Dysmorphic Disorder Questionnaire
BIDQ	Body Image Disturbance Questionnaire
DASS-21	Depression, Anxiety and Stress Scale- 21 Items
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
HEPA	Health-Enhancing Physical Activity
IPAQ-SF	International Physical Activity Questionnaire- Short Form
MDD	Major Depressive disorder
NHMS	National Health and Morbidity Survey
OCD	Obstructive-Compulsive Disorder
PA	Physical Activity
PTSD	Post-Traumatic Stress Disorder
SPSS	Statistical Package for Social Science
UTAR	Universiti Tunku Abdul Rahman

CHAPTER 1

INTRODUCTION

1.1 Background

In the past few years, maturation and rise of technology had taken place and its usage has been generalized. For instance, the evolution of social media had benefits most of the people by providing a platform to interact with others and sharing one's opinion and life with only few simple steps. In the meantime, peer pressure and increased screen time of social media has led to emergence of various psychiatric illnesses, including body dysmorphic disorder (BDD) (Singla, et al., 2020).

BDD or previously known as “dysmorphophobia”, is a commonly underrecognized body image disorder that is associated with high occurrence of delusional symptoms and suicidal action (Alghamdi, et al., 2022). BDD was included in Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), which categorized under “obsessive-compulsive and related disorders”. It is characterized by preoccupation or excessive concern with a non-existent or slight physical defect in a normal appearing person. In other words, people with BDD tends to have anxiety towards their physical appearance although there are no noticeable defects. According to International OCD Foundation (2022), the prevalence of BDD is estimated to be 1.7% to 2.9% in general population. The symptoms include repetitive behaviours such as mirror

checking, excessive grooming, skin picking and reassurance seeking, or with mental acts to compare one's appearance with others as a response towards appearance concerns (American Psychiatric Association, 2013).

The impact of BDD includes high suicidal rate, depression, family problems, social isolation and social anxiety, problems at works and school, drug and alcohol abuse, and financial strain (Granet, 2022). According to International OCD Foundation (2022), suicidal rate is significantly high among BDD patient, with 80% have reported to have suicidal thoughts. Other than that, BDD is highly associated with depression whereby 53-81% of BDD cases was noted to comorbid with depressive disorder and anxiety disorder (Weingarden, et al., 2016). For instance, two studies done by Conroy, et al. (2008) and Perugi, et al. (1998) had shown that patients with BDD has an atypical major depression rate of 13.8% (n = 80) and 42% (n = 86) respectively. In consideration of that, diagnosis of BDD is crucial to improve quality of life and reduce the rate of suicidal attempts (Phillips, 2006).

Physical activity is claimed to be effective in treating and preventing depressive symptoms (Kandola, et al., 2019). In a recent study done by Tatiana, et al. (2018) has showed that BDD is more prevalent among individuals that is physically inactive. Physical activity can reduce depression and anxiety through opioid effects, pain reduction, euphoria states and long-term production of endorphin, which may produce anxiolytic effects (Anderson and Shivakumar, 2013).

1.2 Problem Statements

Body dysmorphic disorder (BDD) is a body image disorder that is normally underrecognized and may cause impaired in functioning and reduction of quality of life. BDD is commonly seen in university students due to physical and psychological changes that occurs during this age, with inclusion of peer pressure, pressure from family and social media. Physical activity and depression have been found to be associated with BDD (Tatania, et al, 2018), (Weingarden, et al., 2016). To date, no studies on prevalence of BDD with depression and physical activity has been conducted among Malaysia university students, which leaves a research gap. Hence, this study will provide an insight on associations of BDD with depression and physical activity.

1.3 Significance of Study

This study aims to study the relationship between physical activity and depression with BDD among university students specifically undergraduate students in UTAR. Prevalence of BDD, physical activity level and depression level among UTAR undergraduate students will also be investigated. BDD is a psychological condition that is characterized by preoccupation of perceived defects in one's appearance, that may lead to significant distress, social and occupational impairment. In extreme cases, individual with BDD might consider suicidal attempt, which can be dangerous. Previous studies have shown that BDD is prevalent among university students, which may affect mental health and well-being negatively. In addition, physical activity was proven to have positive effects towards mental health problems such as depression and anxiety.

However, the influences of physical activity towards BDD symptoms among undergraduate students remains unclear. Therefore, the identification of relationship between BDD, physical activity and depression among undergraduate students is crucial.

This is the first study that aims to determine association of BDD with physical activity and depression among Malaysia's university students. The findings of this study are significant in raising awareness, implicating mental health promotion and prevention in university settings. Moreover, the results of this study might provide a deeper understanding on the interaction between BDD, physical activity and depression, which may contribute to the formation of more effective interventions in the future.

1.4 Objectives

1.4.1 General Objective

To determine the association between physical activity and depression with body dysmorphic disorder among UTAR undergraduate students.

1.4.2 Specific Objectives

1. To determine the prevalence of body dysmorphic disorder among UTAR undergraduate students.
2. To determine physical activity level of UTAR undergraduate students using International Physical Activity Questionnaire (IPAQ).
3. To determine prevalence of depression among UTAR undergraduate students using Depression, Anxiety and Stress Scale (DASS-21).
4. To determine the association between physical activity and depression with body dysmorphic disorder among UTAR undergraduate students.

1.5 Hypothesis

Null hypothesis

1. The prevalence of BDD among undergraduate students is high.
2. Most of the undergraduate students is physically active.
3. The prevalence of BDD among undergraduate students is high.
4. There is association between physical activity and depression with body dysmorphic disorder among UTAR undergraduate students.

Alternative hypothesis

1. The prevalence of BDD among undergraduate students is low.
2. Most of the undergraduate students is physically inactive.
3. The prevalence of BDD among undergraduate students is low.
4. There is no association between physical activity and depression with body dysmorphic disorder among UTAR undergraduate students.

CHAPTER 2

LITERATURE REVIEW

2.1 Body Dysmorphic Disorder

Body dysmorphic disorder (BDD) is a body image disorder that has the characteristics of distressing or impaired preoccupation with imagined or slight defects in one's physical appearance which may lead to poor quality of life, psychosocial functioning impairment and increased suicidal rate (Bjornsson, et al., 2010). It is categorized under obsessive-compulsive disorder (OCD) in Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Symptoms such as consistent mirror checking and reassurance seeking can be found in individuals with BDD (Aflakseir, et al., 2021).

Most of the BDD patient will perform behaviours to reduce their anxiety due to appearance concern. It can be referred as repetitive or compulsive whereby they are driven to these particular behaviours without being able to control and resist. These behaviours will act as a "safety" behaviour in order to diminish danger. Danger in this case is referring to criticizing or laughing by others. One of the common behaviours is camouflaging using clothes, makeup, covering with hands, hair or hat and adjusting body position. Other behaviours include consistent mirror checking on the area of concerned, excessive grooming, comparing concerned body areas with others, seeking reassurance from other people, excessive exercise and dieting (Philips, 2006).

In addition, BDD is often underrecognized. This might be due to the feelings of being ashamed to raise up the issues with the clinician (Grant, et al., 2001). Individual with BDD will usually unwilling to initiate the discussion on their appearance concerns with their clinician as they were ashamed. Similarly, study done by Conroy, et al. (2008) has revealed similar results whereby only one (out of 16) patient diagnosed with BDD has disclosed BDD symptoms to the respective psychiatrist. It is found that the major reason is due to embarrassment, fear to be negatively judged and fear that symptoms will not be fully understood by others. Therefore, screening of BDD is significant.

2.1.1 Prevalence of BDD

According to International OCD Foundation (2022), the prevalence of BDD is 1.7% to 2.9% in general population. Compared to general population, prevalence of BDD in clinical and dermatological setting is higher. A prevalence as high as 11.9% has been reported on patient seeking dermatologic treatment in dermatological settings (Phillips, et al., 2000) and 8.0% of comorbid lifetime BDD was documented in outpatient settings (Nierenberg, et al., 2002).

In addition, it is noticeable that BDD is more common among university students. A high prevalence of 13.9% has been shown in students in King Abdulaziz University in Jeddah (n = 1112) (Hakim, et al., 2021). On the other hand, based on a study conducted by Taqui, et al. (2008), it is revealed that a prevalence of 5.8% among Pakistani medical students (n = 156) was identified with major concerns on hair, being fat, skin and nose for male, whereas the major concern

of female were being fat, skin and teeth respectively. Similarly, Aflakseir, et al. (2021) has revealed that majority (77%) of the college students from Shiraz University (n = 750) were dissatisfied with their body with a prevalence of 4.5% while Dlagnikova and Niekerk (2015) has reported a prevalence of 5.1% of BDD among South African university students. Overall, the prevalence for these studies are inconsistent, but a high prevalence can be observed especially among university students. People with younger age will have more concerns regarding their physical appearance compared to older generations as they are undergoing physical and psychological changes at this age, including pressure from people surrounding, such as peers, family and social media that might affect their opinion on one's body appearance (Shaffi Ahamed, et al., 2016).

Table 2.1: Prevalence of BDD Among University Students.

Author	Population	Prevalence
Taqi, et al. (2008)	Pakistani medical students	5.8%
Dlagnikova & Niekerk (2015)	South African university students	5.1%
Hakim, et al. (2021)	King Abdulaziz University (Jeddah) students	13.9%
Aflakseir, et al. (2021)	Shiraz University students	4.5%

2.1.2 Body Area of Concerns

Individual with BDD is usually having preoccupation with their body appearance. They will describe their perceived flaws to be “unattractive”, “ugly”, “hideous” or “not right”. The common areas of concern are skin (acne or scarring), hair (hair loss, thinning, balding, excessive body hair) and nose (too big or misshapen) respectively (Phillips, 2006). Both Philips and Diaz (1997) and Philips, et al. (2006) have conducted studies on area of concerns for different gender. The result had indicated that the area of concerns for men is mostly thinning of hair and small body build while women on the other hand are having more concern on their weight, hips and excessive body hair, with symptoms, such as skin picking and using makeup to camouflage. On the other hand, a study conducted by Aflakseir, et al. (2021) among college students in Shiraz has shown that college students’ major body area of concern was on skin appearance, hair, nose, body weight, stomach, height, teeth and breast. Similarly, a recent study conducted among female medical students in Saudi Arabia (n = 365) showed major concerns on skin (75%) and fat (68.8%) (Shaffi Ahamed, et al., 2016).

2.1.3 Impact of BDD

Other than being over conscious on own appearance, BDD had bring several negative impacts. This includes psychosocial functioning, poor quality of life, increased suicidal risk, substance abuse and violence.

In a study conducted by Didie, et al. (2008) has shown that high percentage (36%) of individuals (n = 200) with BDD did not go to work for at least one week in

the past month due to psychopathology, and 11% have dropped out of school permanently due to BDD. In terms of psychosocial functioning, overall function functioning of BDD patient were markedly poor over 1 to 3 years, and more severe BDD will have poorer functioning (Philips, et al., 2008).

Other than this, suicidal rate in patients with BDD is markedly elevated. Based on Philips (2007), it is documented that 80% of BDD patients had lifetime suicidal thoughts and 24% to 28% had attempted suicide. Furthermore, 57.8% subject (n = 185) per year has suicidal ideation, 2.6% had attempted suicide and 0.3% cases that completed suicide was reported per year (Philips and Menard, 2006). In addition, alcohol and drug abuse is commonly seen in BDD patient. According to study done by Grant, et al. (2005), 48.9% of participants with BDD (n =86) were diagnosed with lifetime substance-use disorder, whereby 42.6% reported to have alcohol-use disorder and 30.1% is having cannabis-use disorder. Moreover, violent behaviour has been reported in one third of individual with BDD (Perugi, et al., 1997). For instance, damaging other's property or attacking other people. Thus, BDD is said to have huge impact towards a person daily life.

2.2 Physical Activity

Physical activity is defined as any body movements that produced by skeletal muscles that involves energy expenditure (World Health Organization, 2022). The examples of physical activity include walking, jogging, swimming, cycling and even doing day to day chores. Other than preventing and controlling non-communicable disease, such as diabetes, heart disease, stroke and cancer,

moderate- to vigorous- intensity physical activity is proven to improve mental health (World Health Organization, 2022).

Physical activity aids in modulating central nervous system neurotransmitter that function to control alertness (norepinephrine), pleasure feeling (dopamine) and anxiety level (serotonin). Besides, the secretion of neurochemical factors such as opioids and endocannabinoids can be achieved through physical activity. Both neurochemical factors have the ability to provoke the sense of euphoria and well-being, sedation, reduced anxiety feeling and decrease pain sensitivity (Matte, et al., 2013).

In addition, physical activity is also beneficial for individual with MDD. According to a randomized controlled trial conducted by Blumenthal, et al. (2007) on 202 adults diagnosed with major depression, 45% of the subjects that undergone supervised exercise and 40% that undergone home-based exercise after 4 months have successfully achieved remission, which is no longer meeting criteria for MDD. Another evidence has been found in a randomized controlled trial that focus on effects of high and low intensity progressive resistance training among 60 adults more than 60 years-old (Singh, et al., 2005). The results of the study indicates that reduction in Hamilton Rating Scale of Depression score as much as 50% was achieved in 61% for high intensity group and 29% for low intensity group (Singh, et al., 2005).

2.2.1 Physical Activity Level Among University Students

According to National Health and Morbidity Survey (NHMS) 2019, one out of four adults in Malaysia is physically inactive. The groups of people that have the least physical activity includes elderly that aged 75 years old and above (59%), students (39%), females (28%) and urban dwellers (27%). Based on the data provided, it is shown that students are the second highest group who is physically inactive, with female being less physically active.

In a cross-sectional study conducted by Rajappan, et al. (2015) on 100 students from Asia Metropolitan University (AMU) in Malaysia has shown that 40% of the subjects are having high physical activity level, followed by 38% having moderate and 22% having low physical activity level. Other than this, it was found that greater percentage of male students (56%) is having high physical activity level compared to female students (24%), with students aged between 22 to 25 having a larger percentage of high physical activity level (43.5%) (Rajappan, et al., 2015). A higher percentage (74.1%) of students that is physically active has been documented in a recent study conducted by Stephen, et al (2021) among 409 undergraduate students in University Malaysia Sarawak (UNIMAS). Based on the results of the study, 21 years old is the mean age of physically active, with year-2 students (31.3%) being more physically active compared to year-1 (30.8%) and year-3 students (12%). Correspond to study conducted by Rajappan (2015), male (83.2%) were more physically active compared to female (70.1%) in this study.

Table 2.2: Physical Activity Level Among University Students in Malaysia.

Author	Location	Findings
Rajappan, et al. (2015)	Asia Metropolitan University (AMU) in Malaysia	78% of students are physically active
Stephen, et al (2021)	University Malaysia Sarawak (UNIMAS) in Malaysia	74% of students are physically active
Anuar, et al. (2021)	Universiti Teknologi MARA (UiTM) in Malaysia	49.9% of students participated actively in PA

2.2.2 Physical Activity and BDD

Aside from exercise addiction, a symptom of BDD (particularly the subtype-muscle dysmorphia that characterized by obsessively concern with own's muscularity and leanness), there is little to none study have done on association between physical activity and BDD. The first study found was conducted by Tatiana, et al. (2018) among nonclinical Brazilian population (n = 428). The results indicate that BDD was more prevalent among individual who is physically inactive. One of the reasons might be due to positive self-appreciation of physically active individuals, whereby they will "worship" their physical self, thus reduce the risk of having BDD. In addition, physical activity is proven to beneficial for people with depression. Since depression is normally associated with BDD, reduction in symptoms of depression might aids in prevention or improvement of BDD. However, a recent study conducted by Jahan, et al. (2023) showed opposite result. It is proven that there was no association between BDD and physical activity. Therefore, it is shown that the two studies found have contradictory results. Further studies should be conducted to study the association between BDD and physical activity to provide further insight.

2.3 Depression

Depression or major depressive disorder (MDD) is a mood disorder that will cause a person to persistently feel sad and loss of interest in doing anything (Chand and Arif, 2022). It can negatively affect how a person feel and may interfere their daily life. DSM-5 have classified depression into “disruptive mood dysregulation disorder”, “major depressive disorder”, “persistent depressive disorder (dysthymia)”, “premenstrual dysphoric disorder”, and “depressive disorder due to another medical condition”. Depression is normally characterized by emptiness, sadness or irritable mood, together with changes in somatic and cognitive that may affect functioning capacity of a person (Chand and Arif, 2022). The causes of depression are closely related to genetic and environmental factors. According to a twin research data meta-analysis, 37% (95% CI: 31%–42%) of heritability rate for depression is documented; the risk of depression has increased two- to threefold in first-degree offspring of depression patient (Sullivan, et al., 2000).

Symptoms of depression listed in DSM-5 include sleep disturbance, interest or pleasure reduction, feelings of guilt or thoughts of worthlessness, fatigue, impaired in concentration, appetite or weight changes, psychomotor disturbance, suicidal ideation and depressed mood. In order to be diagnosed with depression, 5 out of 9 symptoms listed should present according to American Psychiatric Association (2013). Close and frequent monitoring of suicidal risk should be conducted in individuals with depression (Chand and Arif, 2022).

2.3.1 Prevalence of Depression Among University Students

According to National Health and Morbidity Survey (NHMS) 2019, prevalence of depression among Malaysian adults is 2.3%, with higher rate reported in female (2.6%), compared to male (2.0%). The prevalence of depression among university students in Malaysia is higher compared to general population. In a study conducted by Ashraful Islam, et al. (2018), the prevalence of depression among undergraduate students in University of Malaya is 29.4% (n = 1023), with approximately 30% has experienced depression and 4.4% having severe depression; a higher proportion of second year students experienced severe depression compared to first year student. Similarly, the prevalence of depression among undergraduate health sciences students in International Islamic University Malaysia is 36.4% with n = 365 (Nahas, et al., 2019). In addition, a recent pilot test conducted by Yap, et al. (2021), rate of depression among university student in Malaysia was 33.8% (n = 80), with higher prevalence in females (26.3%) compared to males (7.5%) (Table 2.3).

High depression prevalence among university students can be due to increased stress in academic, independent living, sleeping problem and with post-traumatic stress disorder (PTSD) (Ashraful Islam, et al., 2018). Other than this, factors such as physical activity also plays a role in depression whereby increased physical activity level especially aerobic activity can reduce the risk for depression, hopelessness and suicidal ideation among college students (Taliaferro, et al., 2009).

Table 2.3: Prevalence of Depression Among University Students.

Author	Location	Findings
Ashraful Islam, et al. (2018)	University of Malaya	29.4%
Nahas, et al. (2019)	International Islamic University Malaysia	36.49%
Yap, et al. (2021)	University student in Malaysia	33.8%

2.3.2 Depression and BDD

BDD is commonly associated with depression. Phillips, et al. (1995) reported that the most frequent comorbid mental disorders were MDD, with a lifetime prevalence of 83%, in a clinical population of 130 individuals with BDD. Another study conducted by Perugi, et al. (1997) indicates that 41.3% out of 58 patients with BDD is having MDD; with atypical depression sharing clinical features of BDD such as noticeable interpersonal sensitivity. According to study conducted by Philips, et al. (2007) on correlation of BDD and major depressive disorder (MDD) (n = 178), a high proportion (74.2%) of subjects with BDD have lifetime MDD, and 38.2% is having current MDD. Compared to MDD, it was found that the mean onset of BDD is at a younger age. Moreover, subjects with comorbid MDD had a higher rate of social anxiety, suicidal attempt, poor functioning and low quality of life (Philips, et al., 2007). It is also reported that people who satisfied BDD criteria will have greater levels of depressive features and general distress than people who did not (Cerea, et al., 2017). In addition, a most recent study conducted among Arab Middle Eastern population (n = 520) documented that nearly four times risk of having BDD were reported in participants that has a history of depression ($p = 0.020$) (Alghamdi, et al., 2022).

Therefore, it is shown that BDD is related to depression. Screening for depression among patient with BDD should be considered to ease early detection and intervention (Alghamdi, et al., 2022).

CHAPTER 3

METHODOLOGY

3.1 Study Design

A descriptive, cross-sectional study was performed. The goal of the study was to determine the association between physical activity and depression with body dysmorphic disorder. The data obtained was collected quantitatively, but will be analysed qualitatively. All the data was collected physically using questionnaire. All the participants were selected based on inclusion and exclusion criteria. During the study, researcher will not have controls over the variables. After data collection was performed, researcher reported all the findings of the study.

3.2 Sample Size Calculation

Sample size calculation of the study was based on a simple formula developed by Daniel (1999). The calculation aimed to determine an adequate sample size that used to estimate the population prevalence with good precision (Naing, et al., 2006).

Daniel 1999 formula:

$$n = Z^2 \frac{(p)(1 - p)}{d^2}$$

Whereby n = estimated sample size

Z = Z statistic for a level of confidence

p = expected prevalence

d = precision or margin of error

Referring to the statistical table, z-value of 95% confidence interval is 1.96. Precision used was 0.05 at 95% Confidence Interval (CI). The prevalence of body dysmorphic disorder (BDD) according to Taqui, et al. (2008) was 5.8%, thus, $p = 0.058$.

Therefore,

$$\begin{aligned}n &= Z^2 \frac{(p)(1-p)}{d^2} \\ &= 1.96^2 \frac{(0.058)(1-0.058)}{0.05^2} \\ &= 83.96 \\ n &\approx 84 \text{ subjects}\end{aligned}$$

The estimated sample size for this study was 84 subjects. However, a minimum of 110 subjects were recruited in this study by considering 20% of non-response and dropouts of subjects.

With 20% dropout rate:

$$\begin{aligned}84 + (84 \times 20\%) &= 101 \\ &\approx 110 \text{ respondents}\end{aligned}$$

3.3 Selection Criteria

3.3.1 Inclusion Criteria

- UTAR students who is enrolled in degree courses
- Malaysian citizens

3.3.2 Exclusion Criteria

- Students currently enrolled in foundation, master's degree or PhD
- Pregnant women

3.4 Sampling Method

A non-probability sampling was used in this study, convenience sampling method in specific, whereby all the participants were not chosen randomly. Convenience sampling is defined as the studied subjects in a population that is easily accessible to the researcher, with assumption that subjects in targeted population are homogenous. Convenience sampling is preferred as it is easily accessible, affordable, with readily available subjects (Etikan, 2016). In addition, subjects chosen were also based on their willingness of to participate in the study.

3.5 Research Instruments

Qualitative questionnaire was designed for data collection as attached in Appendix A. The questionnaire was shared by three persons to ease the data collection process. It consists of 6 parts (A-F). The part that is used in this study

includes part A: Sociodemographic; B: body dysmorphic disorder; part C: physical activity; and part D: depression.

3.5.1 Sociodemographic profile

Five close-ended questions of sociodemographic factors that includes gender, age, faculty, household monthly income and marital status were included in Part A: Sociodemographic data. Only first three of the questions were used in the study.

3.5.2 Prevalence of BDD

The self-report 7-item Body Image Disturbance Questionnaire (BIDQ) was used to identified subjects with BDD. BIDQ is a brief self-reported questionnaire that is a modified version of Body Dysmorphic Disorder Questionnaire (BDDQ) constructed by Philips (2005), that is able to generate continuous data. Compared to BDDQ, BIDQ is able to provide a more comprehensive index of negative body image, instead of simple measures of body dissatisfaction (Cash, 2002). BIDQ has validation in its association with other pertinent body image measures, with psychosocial functioning such as depression, anxiety and eating disturbance, and has the ability to foresee eating disturbance above and beyond body dissatisfaction as a predictor. In addition, BIDQ is free of impression management response bias and is internally consistent (Cash, et al., 2004).

All the questions in part B: body dysmorphic disorder, were adapted from BIDQ except for question 2, which was added to assess the foci of concern. As shown in Appendix A, the questionnaire consist of seven questions from BIDQ with one additional question that includes: (1) concern on part(s) of body that considered as unattractive by subject itself (rating from 1: “not at all concerned” to 5: “extremely concerned”); (2) areas of body part that is being concerned; (3) mental preoccupation with the concerns (rating from 1: “not at all preoccupied” to 5: “extremely preoccupied”); (4) emotional distress experiences due to “defect” (rating from 1: “no distress” to 5: “extreme and disabling”); (5) experiencing impairment in social, occupational or other important functioning areas (rating from 1: “no limitation” to 5: “extreme, incapacitating”); (6) interference of “defect” with social life (rating from 1: “never” to 5 : “very often”); (7) interference of defects with education, or role of functioning (rating from 1: “never” to 5: “very often”); (8) avoidance of things due to “defect” (rating from 1: “never” to 5: “very often”).

The scoring for this questionnaire is the sum of seven items in BIDQ, whereby it is scaled from 1 to 5. A mean score was obtained by dividing the sum of scores of students with 7. A score that was more than 3.0 will indicates BDD.

3.5.3 Physical Activity Questionnaire

International Physical Activity Questionnaire (IPAQ) was used in the study to evaluate physical activity level among participants in part C of the questionnaire. IPAQ is available in two version: the long form with 31 items (IPAQ-LF) and the short form with 9 items (IPAQ-SF) (Lee, et al., 20110). In this study, IPAQ-SF was used to ease the data collection process and reduce respondent's burden. IPAQ was used as an instrument for the assessment of physical activity across nation and has been validated in 12 countries (Craig, et al., 2003). Types of activity that are being assessed include walking, moderate-intensity activities and vigorous intensity activities, with frequency (days per week) and duration (time per day) collected separately for each type of the activity.

IPAQ scores can be computed into categorical data or continuous data. All the data from different categories (walking, moderate-intensity activities and vigorous intensity activities) were sum up to obtain continuous score. It was then presented as median-MET minutes using formula below (Table 3.1).

Table 3.1: Formula to Calculate Median-MET Minutes.

$\text{Walking} = 3.3 \times \text{walking mins} \times \text{walking days}$ $\text{Moderate} = 4.0 \times \text{moderate-intensity activity mins} \times \text{moderate days}$ $\text{Vigorous} = 8.0 \times \text{vigorous-intensity activity mins} \times \text{vigorous-intensity days}$ $\text{Total} = (\text{Walk METs} \times \text{min} \times \text{days}) + (\text{Mod METs} \times \text{min} \times \text{days}) +$ $(\text{Vig METs} \times \text{min} \times \text{days})$

On the other hand, categorical score can be obtained through classification of physical activity into three categories: Inactive, Minimally Active and Health-Enhancing Physical Activity (HEPA) Active. The criteria for three of the categories are shown in table 3.2.

Table 3.2: Criteria for Physical Activity Categories.

Category	Criteria
Inactive	<ul style="list-style-type: none"> • No activity is reported OR • Some activity is reported but not enough to meet Categories 2 or 3.
Minimally Active	<p>Any one of the following 3 criteria:</p> <ul style="list-style-type: none"> • 3 or more days of vigorous activity of at least 20 minutes per day OR • 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR • 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week.
HEPA Active	<p>Any one of the following 2 criteria:</p> <ul style="list-style-type: none"> • Vigorous-intensity activity on at least 3 days and accumulating at least 1500 MET minutes/ week OR • 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week.

(International Physical Activity Questionnaire, 2022)

3.5.4 Depression Questionnaire

Depression, Anxiety and Stress Scale-21 Items (DASS-21) (Lovibond and Lovibond, 1995a) was used to evaluate depression level and its severity among participants in the study in part D of the questionnaire. DASS-21 is a set of three self-report scales that is designed to measure emotional states of depression, anxiety and stress. In this study, we are only focusing on depression alone. The depression scale was used to assess dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. DASS-21 has a high internal consistency especially for depression (0.81) (Lovibond and Lovibond, 1995b).

DASS-21 consists of 21 questions. Participants were required to indicate the extent to which they have experiencing each of the symptoms described during the previous week on a 4-point Likert-type scale between 0 (Did not apply to me at all) and 3 (Applied to me very much or most of the time) (Szabó, 2009).

After data was collected, scores for questions 3, 5, 10, 13, 16, 17 and 21 were summed up according to the respective scale and multiply by two. The scores were categorized as shown in Table 3.3.

Table 3.3: Depression Severity According to Scores.

Severity	Scores
Normal	0-9
Mild	10-13
Moderate	14-20
Severe	21-27
Extremely Severe	≥ 28

(Lovibond and Lovibond, 1995a)

3.6 Data Collection

Sets of questionnaires were printed out and distributed around UTAR Kampar campus physically throughout the data collection period. The major reason to choose physical data collection is that it will ease the data collection process whereby participants were able to ask questions and get clarification by researchers when encountering any problems related to questionnaire.

3.7 Statistical Analysis

The data collected from participants has been keyed into Microsoft Excel 2019 and analysed using Statistical Package for Social Science (SPSS) version 26.0. Descriptive analysis was performed on prevalence of BDD, physical activity level and depression. The scores obtained was converted into categorical variables. These categorical variables were expressed as percentage.

In addition, normality test including Kolmogorov-Smirnov (K-S) test was conducted to test for normal distribution (Ghasemi and Zahediasl, 2012). Since the data were not normally distributed, non-parametric test was used to measure the association between variables. In order to measure the association between BDD and physical activity, and BDD and depression, Chi-square test was used, whereby it involves only categorical variables. A *p*-value less than 0.05 was known as statistically significant.

CHAPTER 4

RESULTS

4.1 Sociodemographic Profile

4.1.1 Gender

The distribution of respondents' sociodemographic factors specifically age, gender and faculty were shown in Table 4.1. Among 106 respondents, the majority were females, with a total of 70 respondents (66%) while the minority were males, with a total of 36 respondents (34%).

Table 4.1: Distribution of Respondents According to Gender (n = 106).

Gender	Number of participants (n)	Percentage
Male	36	34%
Female	70	66%

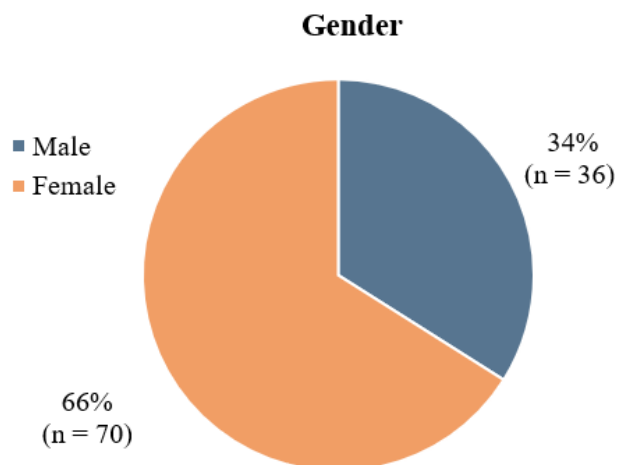


Figure 4.1: Percentage analysis for gender.

4.1.2 Age

The distribution of respondents according to age was tabulated in Table 4.2. In terms of age, most of the respondents were within the age range of 21 to 22 (46.2%), followed by 19 to 20 (45.3) and 23 and above (8.4%).

Table 4.2: Distribution of respondents according to age (n = 106).

	Number of participants (n)	Percentage
Age		
19 to 20	48	45.3%
21 to 22	49	46.2%
23 and above	9	8.4%

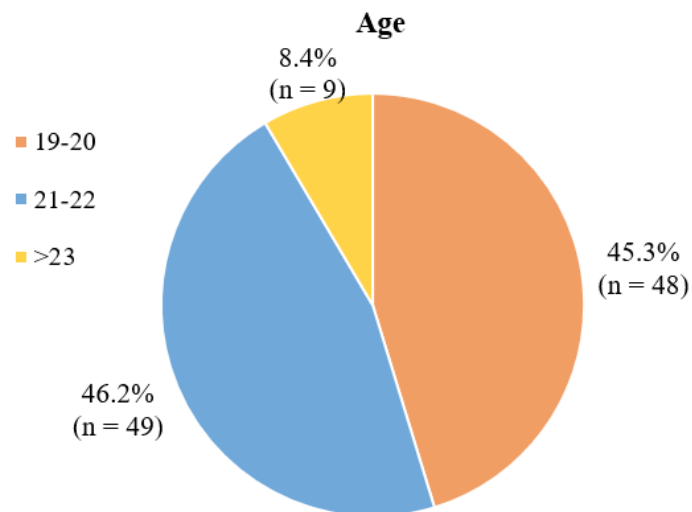


Figure 4.2: Percentage analysis for age.

4.1.3 Faculty

According to Table 4.3, it was noticed that most of the respondents were from Faculty of Business and Finance (FBF) (n = 35, 33.0%), followed by Faculty of Science (FSc) (n = 32, 30.2%), and Faculty of Information and Communication Technology (FICT) (n = 15, 14.2%). Minority of them were from Faculty of Arts and Social Science (FAS), Institute of Chinese Studies (ICS) and Faculty of Engineering and Green Technology (FEGT) with a percentage of 9.4% (n = 10), 7.5% (n = 8) and 5.7% (n = 6), respectively.

Table 4.3: Distribution of respondents according to faculty (n = 106).

	Number of participants (n)	Percentage
Faculty		
Faculty of Arts and Social Science (FAS)	10	9.4%
Faculty of Business and Finance (FBF)	35	33.0%
Faculty of Engineering and Green Technology (FEGT)	6	5.7%
Faculty of Information and Communication Technology (FICT)	15	14.2%
Faculty of Science (FSc)	32	30.2%
Institute of Chinese Studies (ICS)	8	7.5%

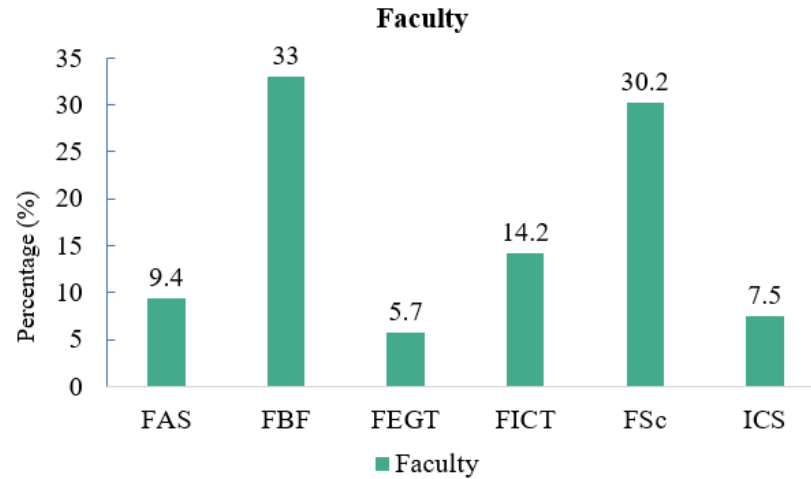


Figure 4.3: Percentage analysis for faculty.

4.2 Body Dysmorphic Disorder Questionnaire

4.2.1 BDD Questionnaire

Table 4.2 has shown the distribution of respondents based on statements in BDD questionnaire. Firstly, out of the 106 respondents, a total of 44 respondents (41.5%) claimed that they have moderate concern on the appearance of some part of their body that they considered it to be unattractive, while 36 (34.0%) of them were somewhat concerned, 13 (12.3%) were not at all concerned, 10 (9.4%) were very concerned and 3 (2.8%) of them were extremely concerned.

Next, majority of the respondents (n = 59, 49.1%) were somewhat preoccupied by their concerns, whereby they will frequently think about it. On the other hand, the rest of the respondents were “not at all preoccupied” (n = 25, 23.6%), “moderately preoccupied” (n = 23, 21.7%), “very preoccupied” (n = 4, 3.8%) and “extremely preoccupied” (n = 2, 1.9%). Notably, nearly half (n = 52, 49.1%) of the respondents chose “moderate and disturbing, but manageable” for

statement on occurrence of distress, torment, pain or difficulty caused by their physical “defect”. The rest of the respondents had chosen for “no distress” (n = 27.4%), “moderate and disturbing, but manageable” (n = 22, 20.8%) and “severe, and very disturbing” (n = 3, 2.8%).

In addition, it was reported that 44 (41.5%) of them have no limitation on impairment in social, occupational or other important areas of functioning that caused by their physical defects. In the meantime, another 44 (41.5%) of the respondents claimed to have mild interference, with no impair on overall performance. 15 (14.2%) of the respondents had chosen the selection of “moderate, definite interference but still manageable”, 2 (1.9%) chosen for “extreme, incapacitating”, and only 1 (0.9%) respondent had chosen for “severe, causes substantial impairment”.

Furthermore, it was noticed that majority of the respondents had never (n = 45, 42.5%) or occasionally (n = 45, 42.5%) experiencing interference of social life due to their physical “defect”, while 13 (12.3%) of them were moderately often and 3 (2.8%) of them were often experiencing the interference. In terms of education, more than half of the respondents (n = 68, 64.2%) had never encountered interference due to their physical “defect”. Apart from that, minority of the respondents were occasionally (n = 29, 27.4%), moderately often (n = 8, 7.5%) and often (n = 1, 0.9%) encountered interference in education due to their physical “defect”. In addition, it was reported that 40 of the respondents occasionally avoid things due to their physical “defect”, followed by 38 (35.8%)

respondents who had never, 21 (19.8) respondents that were moderately often, 4 (3.8%) of the respondents that were often and 3 (2.8%) respondents for very often avoiding things due to their physical “defect”.

Table 4.4: Distribution of respondents according to statements in BDD questionnaire (n = 106).

Statement	Not at all concerned, n (%)	Somewhat concerned, n (%)	Moderately concerned, n (%)	Very concerned, n (%)	Extremely concerned, n (%)
1) Are you concerned about the appearance of some part(s) of your body, which you consider especially unattractive?	13 (12.3%)	36 (34.0%)	44 (41.5%)	10 (9.4%)	3 (2.8%)

Statement	Not at all, n (%)	Somewhat preoccupied, n (%)	Moderately preoccupied, n (%)	Very preoccupied, n (%)	Extremely preoccupied, n (%)
2) If you are at least somewhat concerned, do these concerns preoccupy you? That is, you think about them a lot and they're hard to stop thinking about?	25 (23.6%)	52 (49.1%)	23 (21.7%)	4 (3.8%)	2 (1.9%)

Statement	No distress, n (%)	Mild, and not too disturbing, n (%)	Moderate and disturbing, but manageable, n (%)	Severe, and very disturbing, n (%)	Extreme and disabling, n (%)
3) Has your physical “defect” caused you a lot of distress, torment, pain or difficulty? How much?	29 (27.4%)	52 (49.1%)	22 (20.8%)	3 (2.8%)	0 (0.0%)

Statement	No limitation, n (%)	Mild interference, but overall performance not impaired, n (%)	Moderate, definite interference but still manageable, n (%)	Severe, causes substantial impairment, n (%)	Extreme, incapacitating, n (%)
4) Has your physical “defect” caused you impairment in your social, occupational or other important areas of functioning? How much?	44 (41.5%)	44 (41.5%)	15 (14.2%)	1 (0.9%)	2 (1.9%)

Statement	Never, n (%)	Occasionally, n (%)	Moderately often, n (%)	Often, n (%)	Very often, n (%)
5) Has your physical “defect” significantly interfered with your social life? How much?	45 (42.5%)	45 (42.5%)	13 (12.3%)	3 (2.8%)	0 (0.0%)
6) Has your physical “defect” significantly interfered with your education or your ability to function in your role? How much?	68 (64.2%)	29 (27.4%)	8 (7.5%)	1 (0.9%)	0 (0.0%)
7) Do you ever avoid things because of your physical “defect”? How often?	38 (35.8%)	40 (37.7%)	21 (19.8%)	4 (3.8%)	3 (2.8%)

4.2.2 Body Area of Concern

The body area of concern among undergraduate students were shown in Table 4.5. Based on the results, majority of the respondents had concerns with their skin (26.8%), followed by body size (25.3%) and hair (15.3%). In addition, body area, such as teeth (10.0%), nose (7.9%), eyes (2.1%), height (2.1%), thigh (1.6%), legs (1.1%), face (1.1%) were also reported to be a concern. Minority of the respondents who were also concerning with their fingers (0.5%), belly fat (0.5%), muscle (0.5%) and chin (0.5%). Besides, there were 7 respondents claimed to have no concerns on any part of their body (3.7%).

Table 4.5: Body area of concern among undergraduate students.

Variables	Frequency (%)
Body area of concern	
Body size	48 (25.3%)
Skin	51 (26.8%)
Hair	29 (15.3%)
Teeth	19 (10.0%)
Mouth	1 (0.5%)
Nose	15 (7.9%)
Eyes	4 (2.1%)
Fingers	1 (0.5%)
Height	4 (2.1%)
Thigh	3 (1.6%)
Legs	2 (1.1%)
Belly fat	1 (0.5%)
Muscle	1 (0.5%)
Appearance	1 (0.5%)
Face	2 (1.1%)

Chin	1 (0.5%)
None	7 (3.7%)

* Total percentage is not equal to 100% as respondents were allowed to answer more than one response.

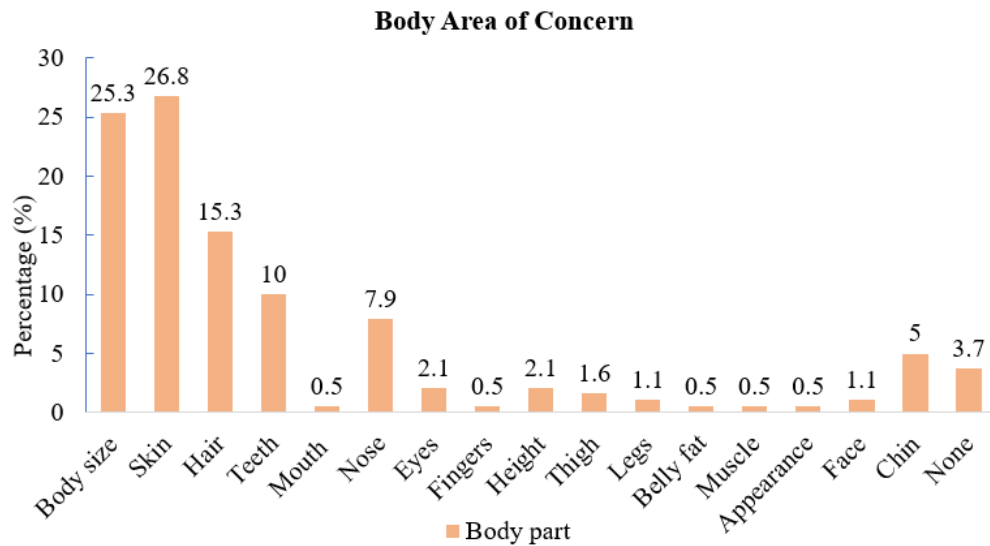


Figure 4.4: Percentage analysis for faculty.

4.3 Depression Questionnaire

The distribution of respondents according to statements in depression questionnaire (DASS-21) has been shown in Table 4.6. Based on the results, the first statement of “couldn’t seem to experience any positive feeling” was not applied to nearly half of the respondents (n = 52, 49.1%), while another big part of the respondents claims that this statement is applied to them to some degree, or some of the time, with a total of 38.7% (n = 41). For the second statement on “I found it difficult to work up the initiative to do things”, it is reported that this statement was applied to majority of the respondents to some degree, or some of the time (n = 49, 46.2%). In addition, more than half of the respondents has

chosen the selection of “Did not apply to me at all” for statement “I felt that I had nothing to look forward to” (n = 57, 53.8%). For the fourth statement on “I felt down-hearted and blue”, most of the respondents claims that this statement was not applied to them at all (n = 54, 50.9%). Furthermore, more than half of the respondents did not apply to the statement of “I was unable to become enthusiastic about anything” at all, with a percentage of 55.7% (n = 59). Moreover, most of the respondents had chosen “Did not apply to me at all” for the statement “I felt I wasn’t worth much as a person” (n = 69, 65.1%). Additionally, the statement of “I felt that life was meaningless” did not apply to most of the respondent at all (n = 71, 67%).

Table 4.6: Distribution of respondents according to statements in depression questionnaire (n = 106).

Statement	Did not apply to me at all, n (%)	Applied to me to some degree, or some of the time, n (%)	Applied to me to a considerable degree or a good part of time, n (%)	Applied to me very much or most of the time, n (%)
1) I couldn't seem to experience any positive feeling at all	52 (49.1%)	41 (38.7%)	11 (10.4%)	2 (1.9%)
2) I found it difficult to work up the initiative to do things	23 (21.7%)	49 (46.2%)	21 (19.8%)	13 (12.3%)
3) I felt that I had nothing to look forward to	57 (53.8%)	30 (28.3%)	13 (12.3%)	6 (5.7%)
4) I felt down-hearted and blue	54 (50.9%)	34 (32.1%)	15 (14.2%)	3 (2.8%)
5) I was unable to become enthusiastic about anything	59 (55.7%)	40 (37.7%)	5 (4.7%)	2 (1.9%)
6) I felt I wasn't worth much as a person	69 (65.1%)	22 (20.8%)	8 (7.5%)	7 (6.6%)
7) I felt that life was meaningless	71 (67.0%)	25 (23.6%)	5 (4.7%)	5 (4.7%)

4.4 BDD, Physical Activity and Depression Among Undergraduate Student

4.4.1 BDD

The prevalence of BDD among undergraduate students BDD among undergraduate students were expressed in frequency and was demonstrated in Table 4.7. According to the results, only 4.7% (n = 5) of the respondents were reported to have BDD, while majority of them of them have no BDD, with a percentage of 95.3% (n =101).

Table 4.7: Percentage of BDD among Undergraduate students (n = 106).

Variables	Frequency	Percentage
BDD		
Yes	5	4.7%
No	101	95.3%

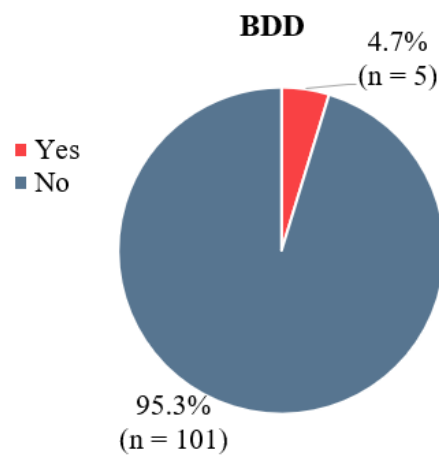


Figure 4.5: Prevalence of BDD.

4.4.2 Physical Activity

Table 4.8 demonstrated the physical activity level among undergraduate students. In terms of physical activity level, most of the respondents were minimally active (n = 48, 45.3%), while 41.5% (n = 44) of them were inactive. Only small proportion of respondents were reported to be HEPA active (n = 14, 13.2%). Therefore, most of the undergraduate students were physically active (58.5%).

Table 4.8: Physical activity level among undergraduate students (n = 106).

Variables	Frequency	Percentage
Physical activity		
Inactive	44	41.5%
Minimally active	48	45.3%
HEPA active	14	13.2%

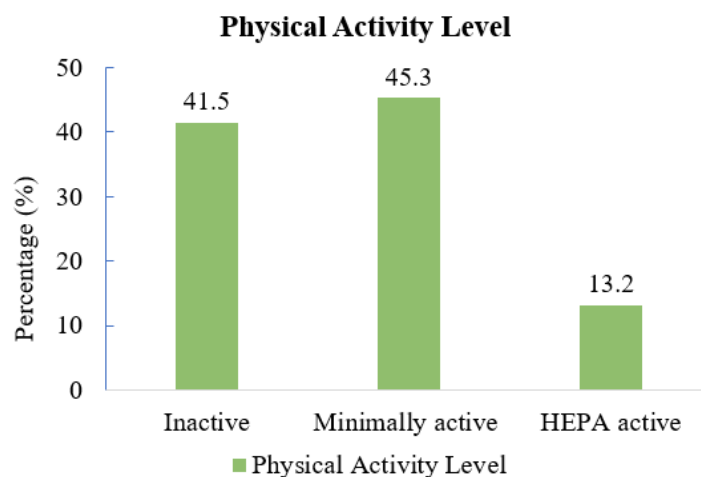


Figure 4.6: Physical activity level among undergraduate students.

4.4.3 Depression

Depression level among undergraduate students were tabulated in Table 4.9. Based on the results, 56.6% of the respondents were reported to be normal (n = 60), followed by mild (n = 17, 16.0%), moderate (n = 16, 15.1%) and severe depression (n = 8, 7.5%). Only 4.7% (n = 5) of the respondents were reported to have extremely severe depression. Therefore, the overall prevalence of depression among UTAR undergraduate students was reported to be 43.4%.

Table 4.9: Depression level among undergraduate students (n = 106).

Variables	Frequency	Percentage
Depression		
Normal	60	56.6%
Mild	17	16.0%
Moderate	16	15.1%
Severe	8	7.5%
Extremely severe	5	4.7%

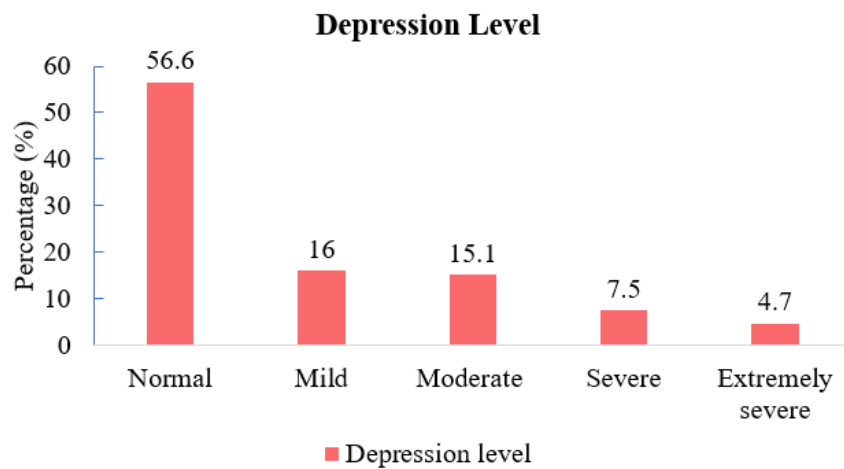


Figure 4.6: Depression level among undergraduate students.

4.5 Association Between BDD with Physical Activity and Depression.

4.5.1 Association between BDD with physical activity

Chi-square test was used to determine the association between body dysmorphic disorder with physical activity. The results were shown in Table 4.10. Based on the results, there was no significant association between body dysmorphic disorder and physical activity with a p -value of 0.896 (p -value > 0.05), which indicated a non-significant result. Among 5 respondents reported to have BDD, 2 of them were physically inactive (4.5%), 2 of them were under category of minimally active (4.2%) while only 1 of them were HEPA active (7.1%).

Table 4.10: Association between BDD with physical activity.

Variables	Body dysmorphic disorder		(P-value)
	Yes [n (%)]	No [n (%)]	
Physical activity			
Inactive	2 (4.5%)	42 (95.5%)	
Minimally active	2 (4.2%)	46 (95.8%)	
HEPA active	1 (7.1%)	13 (92.9%)	0.896

4.5.2 Association Between BDD with Depression

Table 4.11 demonstrated the association between BDD with depression using Chi-square test. It was reported that there was association between BDD and depression, with a p-value of less than 0.001 (p -value < 0.05), which indicated a significant result. All the reported cases of BDD were claimed to have severe depression (100%).

Table 4.11: Association between BDD with depression.

Variables	Body dysmorphic disorder		(P-value)
	Yes [N (%)]	No [N (%)]	
Depression			
Normal	0 (0.0%)	60 (100%)	
Mild	0 (0.0%)	17 (100%)	
Moderate	0 (0.0%)	16 (100%)	
Severe	5 (62.5%)	3 (37.5%)	
Extremely severe	0 (0.0%)	5 (100%)	<0.001*

*p-value <0.05 indicate significant differences.

CHAPTER 5

DISCUSSION

5.1 Prevalence of BDD among UTAR undergraduate students

The prevalence of BDD among UTAR undergraduate students was determined using BIDQ. A total of 106 respondents included 36 male and 70 females participated in the study. The prevalence of BDD among UTAR undergraduate students was expressed as percentage. Based on the results, 4.7% of the students was reported to have BDD. When comparing prevalence of BDD with general population (1.7% to 2.9%) according to International OCD Foundation (2022), the prevalence of current study that focused on university undergraduate students is much higher. BDD is commonly seen in university students compared to general population, which might be due to physical and psychological changes that occurs during this age, with inclusion of peer pressure, pressure from family and social media.

According to a previous study conducted among undergraduate students in Malaysia, the prevalence of BDD among 1308 male students was reported to have a percentage of 3.3% (Kang, et al., 2022). The prevalence from this study was much lower compared to the current findings. This can be due to the imbalance ratio of female to male respondents. In comparison with current study that has a higher percentage of female respondents, study by Kang, et al. (2022) was focus on only male respondents. Although BDD is claimed to have equal

impact on both male and female, female tend to have higher level of severe distress associated with BDD activities (Malcolm et al., 2021). Moreover, there is a study that shows the prevalence of BDD to be higher in female compared to male (Buhlmann, et al., 2010). On the other hand, there are some studies with similar prevalence of BDD have been observed in overseas universities. For instance, the prevalence of BDD among college students according to Aflakseir, et al. (2021) is reported to be 4.5%, with a sample size of 156. Another study conducted by Dlagnikova and Niekerk (2015) showed that South African university students having a BDD prevalence of 5.1% (n = 395). In addition, according to study conducted by Taqui, et al. (2008) among Pakistani medical students, the prevalence of BDD was slightly higher and has been reported to be 5.8% (n = 156). When comparing current findings with all the previous studies, it is noticed that the prevalence of BDD shows a high consistency. This might be due to similarity of studied population, which is university students, with similar age of respondents. Therefore, their way of thinking and what they are currently experiencing during this stage might be the same, thus producing similar results (Donnellan & Lucas, 2008).

However, a recent study conducted by Hakim, et al. (2021) among college students from Shiraz University were shown to have an extremely high prevalence of BDD (13.69%) compared to current study. In that study, the high prevalence of BDD can be explained by a reported high usage of social media among the respondents especially “Snapchat”. Social media was proven to be associated with BDD whereby people tend to make comparison between themselves and famous people on social media, which may develop and enhance

their perception of “ideal body image” (Alsaidan et al., 2020). Therefore, the prevalence of BDD from that study contradicts with current findings.

In general, all the previous and current findings were similar and with high consistency. There are several reasons that might contribute to the occurrence of BDD among university students. Firstly, university students have high levels of stress and pressure due to academic related issues, such as increased academic workload, poor performance in academic and low level of motivation (Agolla & Ongori, 2009). This may increase their susceptibility towards body image concern, leading to increased anxiety and depression, which can further exacerbate BDD symptoms. Next, university students are generally experiencing a period of transition and self-discovery. For instance, they are moving out from their comfort zone and engaging themselves into a new environment, which may require time to adapt. Eventually, this leads them to be more vulnerable to social comparison and feeling of inadequacy (Agolla & Ongori, 2009). In addition, exposure towards social media such as Facebook and Instagram might contribute to unrealistic and distorted perception of beauty standards, which will decrease their self-esteem (Bergagna & Tartaglia, 2018).

5.2 Body Area of Concern

An extra question on body area of concern was included in the questionnaire to understand the body part that is dissatisfied or have major concern among UTAR undergraduate students. Most of the students had concern on their skin (26.8%), body size (25.3%), hair (15.3%) and teeth (10.0%). Concern on skin can be

referred as presence of acne on the face or oily skin condition, while body size can be interpreted as fear of being too fat or too thin and weight status of underweight or overweight. When comparing current study with previous studies, it is observed that the body area of concern is consistent. According to studies conducted by both Philips and Diaz (1997) and Philips, et al. (2006) on body area of concern for different gender, male have concern on hair and body size while female have concern on weight and body hair. Likewise, the body area of concern among students in Shiraz was on skin appearance hair, nose, body weight and teeth (Aflakseir, et al., 2021). In addition, study conducted among female medical students in Saudi Arabia were reported to have major body area of concern on skin and fat (Shaffi Ahamed, et al., 2016).

In the current study, all the respondents were undergraduate university students. University students tend to have higher stress level, and higher rate of depression (43.4%), as what have been shown in the current findings. High level of stress due to hectic schedule, assignments, exams and staying up late during the night were proven to have association with outbreaks of acne on skin. Increased level of stress might lead to secretion of stress hormones, such as cortisol and androgens. These hormones will increase the oil production on skin, thus exacerbate the acne condition (Zari & Alrahmani, 2017). Next, majority of the respondents were female in this study. Based on study conducted by Bibiloni et al. (2017), females were more likely to have concern on their body size and body weight status compared to man due to influences of popular culture and mass media that influences the perception of 'ideal body'. Therefore, body size is

more concerned among the respondents. In short, most of the respondents were have with their skin condition and body size.

5.3 Physical activity level among UTAR undergraduate students

Physical activity level among UTAR undergraduate students was studied using IPAQ. Physical activity level can be categorized into three categories that includes inactive, minimally active and HEPA active. Based on the results, majority of the respondents were minimally active, with a percentage of 45.3%, followed by inactive (45.3%). There is only small part of the respondents that was reported to be HEPA active (13.2%). Therefore, more than half of the respondents were reported to be physically active, with a total of 58.5%.

The current finding was correlate with a previous study done by Goje, et al. (2014) among students in Universiti Putra Malaysia (UPM) in Malaysia. A total of 41.7% of the respondents were reported to be physically active. Similarly, study conducted by Anuar et al. (2021) among Universiti Teknologi MARA (UiTM) also showed similar results, with nearly half (49.9%) of the students were physically active.

Contrarily, when comparing with previous studies done by Rajappan, et al. (2015) and Stephen, et al. (2021) among university students in Malaysia, the physical activity level of respondents in current study was much lower. According to the first study, 78% of the respondents from Asia Metropolitan

University (AMU) were physically active and only 22% of them have low physical activity level, with male students having higher physical activity compared to female (Rajappan, et al., 2015). Likewise, according to the second study, 74.1% of students were reported to be physically active among students in University Malaysia Sarawak (UNIMAS) (Stephen, et al., 2021). The inconsistency of results among these two studies with current study might be due to the imbalance ratio of female to male in the current study. Several studies have shown that males are more physically active compared to female (Khoo, et al., 2020; Rajappan, et al., 2015; Stephen, et al., 2021). This can be explained by the difference in the preference of physical activity performed during leisure time. Male tends to perform vigorous physical activity, such as sports and exercise during leisure time while female preferred moderate to low physical activity such as walking and biking (Azevedo et al., 2007). Therefore, since most of the respondents from current study are female, physical activity level might be lower compared to the previous studies.

In general, majority of the students were reported to be physically active. One of the factors that contribute to this finding is peer influences. According to Gwozdz, et al., (2019), physical activity level among adolescent was associated with friends' behaviour. University students are normally close to their friends, and perform daily activities together. When one of their friends is performing sports, such as badminton and swimming, they might join as well, thus increasing their physical activity level. Although majority of the students were reported to be physically active, there are 41.5% of the respondents who were physically inactive. The low level of physical activity can be due to busy and

hectic schedule, thus lacking of time to perform physical activity (Anuar et al., 2021). Physical inactivity may increase the risk of non-communicable diseases, such as diabetes, heart disease, stroke and cancer (World Health Organization, 2022). Therefore, it is crucial to raise the awareness on the importance of physical activity among UTAR undergraduate students.

5.4 Depression level among UTAR undergraduate students

Using DASS-21 questionnaire as screening tool, the depression level among UTAR undergraduate students was studied. Depression level was categorized into normal, mild, moderate, severe and extremely severe. Based on the results, majority (56.6%) of the students were normal, without depression. In addition, there are 16% of students that is reported to have mild depression, followed by 15.1% for moderate depression, 7.5% for severe depression and 4.7% of students who claimed to have extremely severe depression. In general, the prevalence of depression among UTAR undergraduate students is 43.3%.

When comparing current findings with previous study, it is noticed that the prevalence of current study is similar to neighbour countries. For instance, the prevalence of depression among nursing students in Thailand is 47.01%, while depression rate among trainee teachers in Brunei is 43.63% (Ratanasiripong, 2012; Mundia, 2009). In addition, the depression rate among Chinese University student in China is slightly lower, with a prevalence of 28.4% (Gao et al., 2020). Therefore, it is shown that there are similarities in terms of the prevalence of depression between neighbouring countries. Furthermore, there are several local

findings that showed similar results. For instance, both studies conducted by Nahas, et al. (2019) among International Islamic University Malaysia students and Yap, et al. (2021) on university students in Malaysia has reported a prevalence depression of 6.4% and 33.8%, respectively.

On the other hand, several previous studies conducted among university students in Malaysia showed lower prevalence of depression. According to study conducted by Ashraful Islam, et al. (2018), the prevalence of depression among students in University of Malaya (UM) is reported to be 29.4%, which is much lower compared to current studies. Based on that study, the mean age of respondents is 20.72 ± 1.47 , which is mostly first and second year students. Second year students have 2.52 times more likely to have depression compared to first year students (Ashraful Islam, et al., 2018). Therefore, the depression rate is lower compared to current study.

In general, the prevalence of the current study was considered to be high. The high prevalence of depression can be contributed by several factors. First of all, it is common for university students to experienced high level of stress (Bayram & Bilgel, 2008; Shamsuddin, et al., 2013). They might have undergone stressful events that includes environmental and emotional changes from high school to university life and separation from their home and family members. All these events might require them to adapt to the changes. Moreover, academic pressure such as complexity and amount of teaching materials and peer pressure, with the fear of unable to perform well in academic might also contribute to high level of

stress (Kumaraswamy, 2013). According to study conducted by Zhang et al. (2018) among nursing college students, stress is proven to be associated with depression. Furthermore, it is observed that college students who experienced high level of stress might demonstrate high depressive symptoms (Lee et al., 2013). Therefore, high prevalence of depression among undergraduate students might be due to high stress level.

Next, female has been shown to have twice the risk of having depression compared to male especially during mid-to-late adolescent stage (Cyranowski, et al., 2000; Hyde, et al., 2008; Nolen-Hoeksema & Girgus, 1994). Female might undergo stressor that includes sensitivity towards stressful life events and peer relationship. In addition, physical and psychological changes during puberty such as increased level of sex hormones, might increase the risk of depression among female (Girgus & Yang, 2015). Since majority of the respondents were female, the prevalence of depression in current study is high.

Other than this, the age of respondents should be taken into consideration as a factor contributing to high prevalence of depression. In the current study, more than half (54.6%) of the students are above the age of 21, which were currently engaged in year 2 to year 3 of study. According to Shamsuddin, et al. (2013), older age group of university students tend to have higher level of stress. The stress level might increase during the later year of study in university. One of the possible factors can be due to fear of failure and having concern about their future uncertainties as the years pass by, specifically on work and opportunity

for employment. Furthermore, increased workload during final year and limited leisure time leads to a higher stress level (Ashraful Islam et al., 2018). In short, high depression prevalence among UTAR undergraduate students might be due to factors, such as stress, distribution of gender and age.

5.5 Association of physical activity and depression with BDD among UTAR undergraduate students

The association of BDD with physical activity level and depression among UTAR undergraduate students was studied using Chi-square. A *p*-value that is less than 0.05 indicates significant result.

5.5.1 Association of BDD with physical activity

The association of BDD with physical activity level among UTAR undergraduate students has been studied. Based on the result, there was no association between BDD and physical activity, with a *p*-value of 0.896. Out of the five BDD cases, two of the respondents that is diagnosed with BDD were inactive, while another two of them were minimally active and only one was under HEPA active category.

Until now, there are limited studies have been conducted on the association of BDD with physical activity, only two articles were found so far. In comparison with recent study conducted by Jahan, et al. (2023) that focused on young overweight females with age range of 18 to 30 years old, the results obtained

was consistent, whereby there is no association between BDD and physical activity ($p = 0.858, p > 0.05$). On the other hand, the second study found was conducted by Tatiana, et al. (2018) among non-clinical Brazilian population with an age range of 18 to 60 years old. The result was contradicting with the current study, whereby it is reported that there is association between BDD and physical activity level. The inconsistency of results between current study and previous study could be due to different focused population. Current study was focuses on university students while previous study is focused on general population that aged between 18 to 60 years old. Different age range might lead to different result. In that study, adult was included. Adults have lower physical activity compared to adolescents. The low physical activity among adults might be due to lack of time to perform exercise and having increased work demand (Burton & Turrell, 2000). Other than that, working adults might experience high levels of stress due to long working hours, work overload, difficult tasks and lack of breaks (Michie, 2002). Therefore, these factors might contribute to BDD cases. On the other hand, the studied population in current study was university students that is mainly young adults. They might undergo hormonal changes that may affect mental health. According to Pfeifer and Allen (2021), hormonal and physical changes associated with puberty during adolescence stage may affects various areas of brain development, social cognition and peer relationship. These factors have been shown to link with the risk of mental disorder development.

In general, BDD was proven to have no association with physical activity level in the current study. Based on the results, BDD cases occur among respondents that is under all categories of physical activities that include inactive, minimally active and HEPA active. For physically inactive BDD cases, the occurrence of BDD might be related to mental health, such as mood and depression. As what have been mentioned in the current study, BDD is associated with depression ($p = 0.00$) and the prevalence of depression among UTAR undergraduate students is high (43.3%). In this case, depression might be a major factor of BDD development. Moreover, individuals with BDD may also avoid physical activities that may trigger their anxiety or self-consciousness about their appearance. For instance, according to a study conducted by Tasoula, et al. (2012), 14% of respondents have avoided sports activity such as swimming due to embarrassment. Therefore, BDD cases among students who are physically inactive might be due to psychological factors instead of physical activity.

On the other hand, two reported cases were under category of minimally active and one reported BDD cases was under the category of HEPA active. This can be explained in terms of exercise addiction or exercise obsession due to concern on their body size. According to Peluso and Andrade (2005), physical activity can be an obsession for some people, whereby they are extensively preoccupied with exercise and excessive training even when it is affecting personal life. For instance, individuals might perform vigorous physical activity constantly due to distorted perception on their body size, whereby they are dissatisfied with their body size even when they are thin enough. In addition, there are studies reported that no improvement on mood was observed after moderate level of physical

activity, and might even cause mood deterioration (Berger, et al., 1997; Peluso & Andrade, 2005). Furthermore, according to Morgan, et al. (1987), high intensity physical activity that last for 10 days to some weeks might worsening the mood. Therefore, BDD is e not associated with physical activity.

5.5.2 Association of BDD and Depression

Based on the chi-square result, a significant association between depression and BDD ($p < 0.001$) was reported. Among five cases of the reported BDD cases, all five cases claimed to have severe depression. When comparing current study with previous studies, the results were consistent, whereby there is association between BDD and depression. For instance, a study conducted by Hakim, et al. (2021) among Jeddah university students showed a significant association between BDD and depression, with a p-value of less than 0.01. Other than this, Perugi, et al. (1997) has reported that 41.3% of patient that is diagnosed with BDD were having depression. Similarly, a study conducted by Philips, et al. (2007) among BDD patients found that 74.2% of subjects with BDD experienced lifetime depression, with 38.2% having current depression. In addition, it is reported that BDD was found to be a significant predictor of depression and people with BDD criteria is generally having a greater level of depressive features and general distress than people who do not (Cerea, et al., 2017; Hakim, et al., 2021).

In general, there are several reasons that contribute to the result. First of all, people with BDD tend to have a negative self-image, whereby they think that they have defects on their physical appearance which leads to low self-esteem (Kuck et al., 2021). People with low self-esteem might experience feelings of sadness, hopelessness and worthlessness. According to Orth, et al. (2014), self-esteem is proven to be a risk factor for depression, which supported the vulnerability model. The vulnerability model suggests that when individual who has low self-esteem encounter stressful life events, a greater risk of that individual to be more vulnerable in developing depression. Therefore, negative self-image among BDD patient might be a factor contributing to depression. Additionally, BDD leads to social isolation or social phobia, whereby individuals with BDD tend to avoid social situation due to fear of being judged for their appearance (Veale, 2004). According to Choi (2015), social isolation may affect mental health among adults, which include depression. Social isolation in this case might contribute to the sense of loneliness and depressed. Other than this, individuals with BDD might have obsessive thoughts and were frequently anxious about their appearance or physical “defect”. Symptoms, such as frequent mirror checking, excessive grooming and reassurance seeking are common among individuals with BDD (Wilhelm, et al., 2016). According to Pallanti, et al. (2011), individuals who have obsessive thoughts have 10 times greater chance to experience depression than those who do not. Therefore, obsessive thoughts in BDD patient might causes one’s to have distress, thus leading to depression.

5.6 Strengths and Limitations

The strengths of the study is the usage of validated questionnaires such as BIDQ, IPAQ and DASS-21, which has been used by previous studies. This results in a high reliability and comparable results. Other than that, this is the first study conducted to study the association of BDD with physical activity and depression among Malaysia's university student, which serves as a reference for future researchers when exploring on this topic. In addition, this study also revealed that there is association between BDD and depression. This may provide an insight for the development of more effective interventions in the future in terms of dealing with BDD.

However, there are few limitations in the study. Firstly, this is a cross-sectional study designed to focus on observing the relationship between BDD, physical activity and depression. It is unsuitable to draw conclusion and reveal the causality of the association. Besides, the data collection in the study used self-report method, which may contribute to response or recall bias, whereby respondents unable to generate accurate and precise information. Other than this, this study focuses on only one university. This study alone is unable to represent the whole Malaysian population. Moreover, the use of convenience sampling might also contribute to selection bias.

5.7 Recommendations for future studies

More research should be conducted in order to provide prove and evidence for future studies. Several recommendations can be suggested for future studies. Firstly, different study designs, such as experimental study or longitudinal study could be performed when studying the relationship between BDD, physical activity and depression. This may help to generate a more reliable result. Study design specifically experimental study is a powerful tool to understand the cause-and-effect relationship between variables, and therefore it is highly recommended. Besides, the study can be designed using random sampling instead of convenience sampling to prevent occurrence of bias. In addition, expansion of the sample size and focused population is recommended to produce a result that can represent the whole Malaysian population. For instance, it is encouraged to include samples from other universities from different region of Malaysia.

CHAPTER 6

CONCLUSION

In the current study, the relationship between BDD, physical activity and depression has been studied. Based on the results, the prevalence of BDD among UTAR undergraduate students was reported to be high. The major body area of concern among the students includes skin appearance and body size. In terms of physical activity, majority of the students were physically active, with only small proportion of them are physically inactive. Besides, the prevalence of depression among the students were considered as high although majority of the students are normal. Other than this, it is concluded that there is no association was observed between BDD and physical activity ($p = 0.896$). However, the study has shown that there is association between BDD and depression ($p < 0.001$). Additional studies are recommended to further investigate the causality between the variables to generate a more effective intervention in terms of BDD prevention.

REFERENCES

- Aflakseir, A., Jamali, S. and Mollazadeh, J., 2021. Prevalence of body dysmorphic disorder among a group of college students in Shiraz. *Zahedan Journal of Research in Medical Sciences*, [online] 23(2). <https://doi.org/10.5812/zjrms.95247>
- Agolla, J. E., & Ongori, H. (2009). Assessment of academic stress among undergraduate students: The case of university of Bostwana. *Educational Research and Reviews*, 4(2), 63–70.
- Alghamdi, W. A., Subki, A. H., Khatib, H. A., Butt, N. S., Alghamdi, R. A., Alsallum, M. S., Alharbi, A. A., Almatrafi, M. N., Alobisi, A. A., Al-Zaben, F., & Koenig, H. G. (2022). Body Dysmorphic Disorder Symptoms: Prevalence and Risk Factors in an Arab Middle Eastern Population. *International Journal of General Medicine*, Volume 15, 2905–2912. <https://doi.org/10.2147/IJGM.S329942>
- Alsaidan, M. S., Altayar, N. S., Alshmmari, S. H., Alshammari, M. M., Alqahtani, F. T., & Mohajer, K. A. (2020). The prevalence and determinants of body dysmorphic disorder among young social media users: A cross-sectional study. *Dermatology Reports*, 12(3). <https://doi.org/10.4081/dr.2020.8774>
- Anuar, A., Hussin, N. Z. M. H., Maon, S. N., Hassan, N. M., Abdullah, M. Z., Mohd, I. H., & Sahudin, Z. (2021). Physical Inactivity among University Students. *International Journal of Academic Research in Business and Social Sciences*, 11(5), pp. 356–366. <https://doi.org/10.6007/IJARBSS/v11-i5/9934>
- American Psychiatric Association, 2013. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. 5th ed. Washington, D.C.: American Psychiatric Publishing.
- Ashraful Islam, M., Yun Low, W., Ting Tong, W., Wan Yuen, C. C., & Abdullah, A. (2018). Factors Associated with Depression among University Students in Malaysia: A Cross-sectional Study. *KnE Life Sciences*, 4(4), 415. <https://doi.org/10.18502/cls.v4i4.2302>

Azevedo, M. R., Araújo, C. L. P., Reichert, F. F., Siqueira, F. V., da Silva, M. C., & Hallal, P. C. (2007). Gender differences in leisure-time physical activity. *International Journal of Public Health*, 52(1), 8–15. <https://doi.org/10.1007/s00038-006-5062-1>

Bergagna, E., & Tartaglia, S. (2018). Self-esteem, social comparison, and Facebook use. *Europe's Journal of Psychology*, 14(4), 831–845. <https://doi.org/10.5964/ejop.v14i4.1592>

Berger, B. G., Prapavessis, H., Grove, J. R., & Butki, B. D. (1997). Relationship of Swimming Distance, Expectancy, and Performance to Mood States of Competitive Athletes. *Perceptual and Motor Skills*, 84(3_suppl), 1199–1210. <https://doi.org/10.2466/pms.1997.84.3c.1199>

Bibiloni, M. del M., Coll, J. L., Pich, J., Pons, A., & Tur, J. A. (2017). Body image satisfaction and weight concerns among a Mediterranean adult population. *BMC Public Health*, 17(1), 39. <https://doi.org/10.1186/s12889-016-3919-7>

Bjornsson, A., Didie, E. and Phillips, K., 2010. Body dysmorphic disorder. *Dialogues in Clinical Neuroscience*, 12(2), pp.221-232. <https://doi.org/10.31887/DCNS.2010.12.2/abjornsson>

Blumenthal, J. A., Babyak, M. A., Doraiswamy, P. M., Watkins, L., Hoffman, B. M., Barbour, K. A., Herman, S., Craighead, W. E., Brosse, A. L., Waugh, R., Hinderliter, A., & Sherwood, A. (2007). Exercise and Pharmacotherapy in the Treatment of Major Depressive Disorder. *Psychosomatic Medicine*, 69(7), 587–596. <https://doi.org/10.1097/PSY.0b013e318148c19a>

Buhlmann, U., Glaesmer, H., Mewes, R., Fama, J. M., Wilhelm, S., Brähler, E., & Rief, W. (2010). Updates on the prevalence of body dysmorphic disorder: A population-based survey. *Psychiatry Research*, 178(1), 171–175. <https://doi.org/10.1016/j.psychres.2009.05.002>

Burton, N. W., & Turrell, G. (2000). Occupation, Hours Worked, and Leisure-Time Physical Activity. *Preventive Medicine*, 31(6), 673–681. <https://doi.org/10.1006/pmed.2000.0763>

Cash, T., 2002. A "negative body image": Evaluating epidemiological evidence. *Body Image: A Handbook of Theory, Research, and Clinical Practice*, pp.269-276.

Cash, T., Phillips, K., Santos, M. and Hrabosky, J., 2004. Measuring "negative body image": validation of the Body Image Disturbance Questionnaire in a nonclinical population. *Body Image*, 1(4), pp.363-372.

Cerea, S., Bottesi, G., Grisham, J.R. and Ghisi, M. (2017). Body dysmorphic disorder and its associated psychological and psychopathological features in an Italian community sample. *International Journal of Psychiatry in Clinical Practice*, 22(3), pp.206–214. doi:10.1080/13651501.2017.1393545.

Chand, S.P. and Arif, H., 2022. *Depression*. [e-book] Treasure Island (FL): StatPearls Publishing. Available at: StatPearls <<https://www.ncbi.nlm.nih.gov/books/NBK430847/>> [Accessed 12 October 2022].

Choi, H. (2015). Impact of social isolation on behavioral health in elderly: Systematic review. *World Journal of Psychiatry*, 5(4), 432. <https://doi.org/10.5498/wjp.v5.i4.432>

Conroy, M., Menard, W., Fleming-Ives, K., Modha, P., Cerullo, H. and Phillips, K., 2008. Prevalence and clinical characteristics of body dysmorphic disorder in an adult inpatient setting. *General Hospital Psychiatry*, 30(1), pp.67-72. <https://doi.org/10.1016/j.genhosppsy.2007.09.004>

Craig, C., Marshall, A., Sjöström, M., Bauman, A., Booth, M., Ainsworth, B., Pratt, M., Ekelund, U., Yngve, A., Sallis, J. and Oja, P., 2003. International Physical Activity Questionnaire: 12-Country Reliability and Validity. *Medicine & Science in Sports & Exercise*, 35(8), pp.1381-1395. <https://doi.org/10.1249/01.MSS.0000078924.61453.FB>

Cyranowski, J. M., Frank, E., Young, E., & Shear, M. K. (2000). Adolescent Onset of the Gender Difference in Lifetime Rates of Major Depression. *Archives of General Psychiatry*, 57(1), 21. <https://doi.org/10.1001/archpsyc.57.1.21>

Didie, E., Menard, W., Stern, A. and Phillips, K., 2008. Occupational functioning and impairment in adults with body dysmorphic disorder. *Comprehensive Psychiatry*, 49(6), pp.561-569. <https://doi.org/10.1016/j.comppsy.2008.04.003>

Dlagnikova, A. (2015). The prevalence of body dysmorphic disorder among South African university students. *South African Journal of Psychiatry*, [online] 21(3), p.104. doi:10.7196/SAJP.8251.

Donnellan, M. B., & Lucas, R. E. (2008). Age differences in the big five across the life span: Evidence from two national samples. *Psychology and Aging*, 23(3), 558–566. <https://doi.org/10.1037/a0012897>

Etikan, I., 2016. Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), p.1. <https://doi.org/10.11648/j.ajtas.20160501.11>

Gao, L., Xie, Y., Jia, C., & Wang, W. (2020). Prevalence of depression among Chinese university students: a systematic review and meta-analysis. *Scientific Reports*, 10(1), 15897. <https://doi.org/10.1038/s41598-020-72998-1>

Ghasemi, A. and Zahediasl, S., 2012. Normality Tests for Statistical Analysis: A Guide for Non-Statisticians. *International Journal of Endocrinology and Metabolism*, 10(2), pp.486-489. <https://doi.org/10.5812/ijem.3505>

Girgus, J. S., & Yang, K. (2015). Gender and depression. *Current Opinion in Psychology*, 4, 53–60. <https://doi.org/10.1016/j.copsy.2015.01.019>

Goje, M., Salmiah, M. S., Ahmad Azuhairi, A., & Jusoff, K. (2014). Physical Inactivity and Its Associated Factors among University Students. *Journal of Dental and Medical Sciences (IOSR-JDMS)*, 13(10), 119–130.

Granet, S., 2022. *Impact of BDD*. [online] Impact BDD. Available at: <<https://bdd.iocdf.org/expert-opinions/impact-of-bdd/>> [Accessed 7 October 2022].

Grant, J., Kim, S. and Crow, S., 2001. Prevalence and Clinical Features of Body Dysmorphic Disorder in Adolescent and Adult Psychiatric Inpatients. *The Journal of Clinical Psychiatry*, 62(7), pp.517-522. <https://doi.org/10.4088/jcp.v62n07a03>

Grant, J., Menard, W., Pagano, M., Fay, C. and Phillips, K., 2005. Substance Use Disorders in Individuals With Body Dysmorphic Disorder. *The Journal of Clinical Psychiatry*, [online] 66(03), pp.309-316. <https://doi.org/10.4088/jcp.v66n0306>

Gwozdz, W., Nie, P., Sousa-Poza, A., DeHenauw, S., Felső, R., Hebestreit, A., Iguacel, I., Lissner, L., Lauria, F., Page, A., Reisch, L. A., Tornaritis, M., Veidebaum, T., Williams, G., & Foraita, R. (2019). Peer Effects on Weight Status, Dietary Behaviour and Physical Activity among Adolescents in Europe: Findings from the I.Family Study. *Kyklos*, 72(2), 270–296. <https://doi.org/10.1111/kykl.12197>

Hakim, R.F., Alrahmani, D.A., Ahmed, D.M., Alharthi, N.A., Fida, A.R. and Al-Raddadi, R.M. (2021) “Association of body dysmorphic disorder with anxiety, depression, and stress among university students,” *Journal of Taibah University Medical Sciences*, 16(5), pp. 689–694. Available at: <https://doi.org/10.1016/j.jtumed.2021.05.008>.

Hyde, J. S., Mezulis, A. H., & Abramson, L. Y. (2008). The ABCs of depression: Integrating affective, biological, and cognitive models to explain the emergence of the gender difference in depression. *Psychological Review*, 115(2), 291–313. <https://doi.org/10.1037/0033-295X.115.2.291>

Institute of Health, 2020. *National Health and Morbidity Survey (NHMS) 2019: Non-communicable diseases, healthcare demand, and health literacy—Key Findings*. [ebook] Shah Alam: Institute for Public Health National Institutes of Health (NIH) Ministry of Health Malaysia, p.21. Available at: <https://iptk.moh.gov.my/images/technical_report/2020/4_Infographic_Booklet_NHMS_2019_-_English.pdf> [Accessed 12 October 2022].

International OCD Foundation. 2022. *Suicidality in BDD*. [online] Available at: <<https://bdd.iocdf.org/professionals/suicidality-in-bdd/#:~:text=Individuals%20with%20BDD%20have%20a,or%20more%20have%20attempted%20suicide.>> [Accessed 7 October 2022].

International Physical Activity Questionnaire. 2022. *International Physical Activity Questionnaire*. [online] Available at: <<https://sites.google.com/site/theipaq/>> [Accessed 18 October 2022].

Jahan, S., Malik, M., Amen, S., Bibi, Z., Zahid, S., Iqbal, M., & Ghous, M. (2023). Association of physical activity with depression and body dysmorphia in young overweight females. *Rawal Medical Journal*, 48(1), pp. 216-219.

Kandola, A., Ashdown-Franks, G., Hendrikse, J., Sabiston, C. and Stubbs, B., 2019. Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity. *Neuroscience & Biobehavioral Reviews*, 107, pp.525-539. <https://doi.org/10.1016/j.neubiorev.2019.09.040>

Kang, W. H., Loo, M. Y., Leong, X. M., Ooi, Y. F., Teo, W. Q., Neoh, T. J., & Ling, W. C. (2022). Body dysmorphic disorder and depression among male undergraduate students in a Malaysian University. *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsy.2022.977238>

Kuck, N., Cafitz, L., Bürkner, P.-C., Hoppen, L., Wilhelm, S., & Buhlmann, U. (2021). Body dysmorphic disorder and self-esteem: a meta-analysis. *BMC Psychiatry*, 21(1), 310. <https://doi.org/10.1186/s12888-021-03185-3>

Kumaraswamy, N. (2013). Academic stress, anxiety and depression among college students- a brief review. *International Review of Social Sciences and Humanities*, 5(1), pp. 135–143.

Lee, P., Macfarlane, D., Lam, T. and Stewart, S., 2011. Validity of the international physical activity questionnaire short form (IPAQ-SF): A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, [online] 8(1), pp. 115–126. <https://doi.org/10.1186/1479-5868-8-115>

Lee, S.-Y., Wuertz, C., Rogers, R., & Chen, Y.-P. (2013). Stress and Sleep Disturbances in Female College Students. *American Journal of Health Behavior*, 37(6), 851–858. <https://doi.org/10.5993/AJHB.37.6.14>

Lovibond, S. and Lovibond, P., 1995a. *Manual for the Depression Anxiety & Stress Scales*. 2nd ed. Sydney: Psychology Foundation.

Lovibond, P. and Lovibond, S., 1995b. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), pp.335-343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)

Malcolm, A., Pikoos, T. D., Castle, D. J., & Rossell, S. L. (2021). An update on gender differences in major symptom phenomenology among adults with body dysmorphic disorder. *Psychiatry Research*, 295, 113619. <https://doi.org/10.1016/j.psychres.2020.113619>

Matta Mello Portugal, E., Cevada, T., Sobral Monteiro-Junior, R., Teixeira Guimarães, T., da Cruz Rubini, E., Lattari, E., Blois, C. and Camaz Deslandes, A., 2013. Neuroscience of Exercise: From Neurobiology Mechanisms to Mental Health. *Neuropsychobiology*, [online] 68(1), pp.1-14. <https://doi.org/10.1159/000350946>

McHugh, M., 2013. The Chi-square test of independence. *Biochemia Medica*, [online] pp.143-149. <https://doi.org/10.11613/BM.2013.018>

Michie, S. (2002). CAUSES AND MANAGEMENT OF STRESS AT WORK. *Occupational and Environmental Medicine*, 59(1), 67–72. <https://doi.org/10.1136/oem.59.1.67>

Morgan, W. P., Brown, D. R., Raglin, J. S., O'Connor, P. J., & Ellickson, K. A. (1987). Psychological monitoring of overtraining and staleness. *British Journal of Sports Medicine*, 21(3), 107–114. <https://doi.org/10.1136/bjism.21.3.107>

Mundia, L. (2009). The prevalence of depression, anxiety and stress in Brunei preservice student teachers. *The Internet Journal of Mental Health*, 6(2), pp. 1–7.

Nahas, A., Elkalmi, R., Al-Shami, A. and Elsayed, T., 2019. Prevalence of depression among health sciences students: Findings from a public university in Malaysia. *Journal of Pharmacy And Bioallied Sciences*, 11(2), p.170. https://doi.org/10.4103/jpbs.JPBS_263_18

Naing, L., Winn, T. and Rusli, B., 2006. Practical Issues in Calculating the Sample Size for Prevalence Studies. *Archives of Orofacial Sciences*, [online] 1, pp.9-14.

Nierenberg, A., Phillips, K., Petersen, T., Kelly, K., Alpert, J., Worthington, J., Tedlow, J., Rosenbaum, J. and Fava, M., 2002. Body dysmorphic disorder in outpatients with major depression. *Journal of Affective Disorders*, 69(1-3), pp.141-148. [https://doi.org/10.1016/s0165-0327\(01\)00304-4](https://doi.org/10.1016/s0165-0327(01)00304-4)

Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin*, 115(3), 424–443. <https://doi.org/10.1037/0033-2909.115.3.424>

Orth, U., Robins, R. W., Widaman, K. F., & Conger, R. D. (2014). Is low self-esteem a risk factor for depression? Findings from a longitudinal study of Mexican-origin youth. *Developmental Psychology*, 50(2), 622–633. <https://doi.org/10.1037/a0033817>

Pallanti, S., Grassi, G., Sarrecchia, E. D., Cantisani, A., & Pellegrini, M. (2011). Obsessive–Compulsive Disorder Comorbidity: Clinical Assessment and Therapeutic Implications. *Frontiers in Psychiatry*, 2, pp. 1–7. <https://doi.org/10.3389/fpsy.2011.00070>,

Peluso, M. A. M., & Andrade, L. H. S. G. de. (2005). Physical activity and mental health: The association between exercise and mood. *Clinics*, 60(1), 61–70. <https://doi.org/10.1590/S1807-59322005000100012>

Perugi, G., Akiskal, H., Giannotti, D., Frare, F., Di Vaio, S. and Cassano, G., 1997. Gender-Related Differences in Body Dysmorphic Disorder (Dysmorphophobia). *The Journal of Nervous & Mental Disease*, 185(9), pp.578-582. <https://doi.org/10.1097/00005053-199709000-00007>

Perugi, G., Akiskal, H., Lattanzi, L., Cecconi, D., Mastrocinque, C., Patronelli, A., Vignoli, S. and Bemi, E., 1998. The high prevalence of “Soft” bipolar (II) features in atypical depression. *Comprehensive Psychiatry*, 39(2), pp.63-71.

Perugi, G., Giannotti, D., Frare, F., Vaio, S., Valori, E., Maggi, L., Cassano, G. and Akiskal, H., 1997. Prevalence, phenomenology and comorbidity of body dysmorphic disorder (dysmorphophobia) in a clinical population. *International Journal of Psychiatry in Clinical Practice*, 1(2), pp.77-82. <https://doi.org/10.3109/13651509709024707>

Pfeifer, J. H., & Allen, N. B. (2021). Puberty Initiates Cascading Relationships Between Neurodevelopmental, Social, and Internalizing Processes Across Adolescence. *Biological Psychiatry*, 89(2), 99–108. <https://doi.org/10.1016/j.biopsych.2020.09.002>

Phillips, K. and Diaz, S., 1997. Gender Differences in Body Dysmorphic Disorder. *The Journal of Nervous & Mental Disease*, 185(9), pp.570–577. <https://doi.org/10.1097/00005053-199709000-00006>

Phillips, K. and Menard, W., 2022. Suicidality in Body Dysmorphic Disorder: A Prospective Study. *The American Journal of Psychiatry*, 163(7), pp.1280–1282. <https://doi.org/10.1176/appi.ajp.163.7.1280>

Phillips, K., Didie, E. and Menard, W., 2007. Clinical features and correlates of major depressive disorder in individuals with body dysmorphic disorder. *Journal of Affective Disorders*, 97(1-3), pp.129-135. <https://doi.org/10.1016/j.jad.2006.06.006>

Phillips, K., Dufresne, R., Wilkel, C. and Vittorio, C., 2000. Rate of body dysmorphic disorder in dermatology patients. *Journal of the American Academy of Dermatology*, 42(3), pp.436-441. [https://doi.org/10.1016/s0190-9622\(00\)90215-9](https://doi.org/10.1016/s0190-9622(00)90215-9)

Phillips, K., McElroy, S. and Pope Jr, H., 1995. Body dysmorphic disorder: an obsessive-compulsive spectrum disorder, a form of affective spectrum disorder, or both?. *The Journal of Clinical Psychiatry*, 56(4), pp.41-51.

Phillips, K., Menard, W. and Fay, C., 2006. Gender similarities and differences in 200 individuals with body dysmorphic disorder. *Comprehensive Psychiatry*, 47(2), pp.77-87. <https://doi.org/10.1016/j.comppsy.2005.07.002>

Phillips, K., Quinn, G. and Stout, R., 2008. Functional impairment in body dysmorphic disorder: A prospective, follow-up study. *Journal of Psychiatric Research*, 42(9), pp.701-707. <https://doi.org/10.1016/j.jpsychires.2007.07.010>

Phillips, K., 2006. The Presentation of Body Dysmorphic Disorder in Medical Settings. *Primary psychiatry*, [online] 13(7), pp.51-59.

Phillips, K., 2005. *The broken mirror: understanding and treating body dysmorphic disorder*. Oxford: Oxford University Press (OUP).

Phillips, K., 2007. Suicidality in Body Dysmorphic Disorder. *Primary psychiatry*, [online] 14(12), pp.58-66.

Phillips, K., 2022. *Prevalence of BDD - BDD*. [online] International OCD Foundation. Available at: <<https://bdd.iocdf.org/professionals/prevalence/>> [Accessed 6 October 2022].

Rajappan, R., Selvaganapathy, K. and Liew, L., 2015. Physical Activity Level Among University Students: A Cross Sectional Survey. *International Journal of Physiotherapy and Research*, 3(6), pp.1336-1343. <https://doi.org/10.16965/ijpr.2015.202>

Shaffi Ahamed, S., Enani, J., Alfaraidi, L., Sannari, L., Algain, R., Alsawah, Z. and Al Hazmi, A., 2016. Prevalence of Body Dysmorphic Disorder and its Association With Body Features in Female Medical Students. *Iranian Journal of Psychiatry and Behavioral Sciences*, 10(2). <https://doi.org/10.17795/ijpbs-3868>

Shamsuddin, K., Fadzil, F., Ismail, W. S. W., Shah, S. A., Omar, K., Muhammad, N. A., Jaffar, A., Ismail, A., & Mahadevan, R. (2013). Correlates of depression, anxiety and stress among Malaysian university students. *Asian Journal of Psychiatry*, 6(4), 318–323. <https://doi.org/10.1016/j.ajp.2013.01.014>

Singh, N., Stavrinou, T., Scarbek, Y., Galambos, G., Liber, C. and Fiatarone Singh, M., 2005. A Randomized Controlled Trial of High Versus Low Intensity Weight Training Versus General Practitioner Care for Clinical Depression in Older Adults. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 60(6), pp.768-776. <https://doi.org/10.1093/gerona/60.6.768>

Singla, G., Himanshu, Kaur, A. and Kaur, A., 2020. Rising dysmorphia among adolescents : A cause for concern. *Journal of Family Medicine and Primary Care*, [online] 9(2), p.567. https://doi.org/10.4103/jfmmpc.jfmmpc_738_19

Stephen, J., Elias, R., Gilbert, B., Mohamed Farid, N., Ming Han, D. and Anak Atang, S., 2021. Physical Activity Among Unimas Undergraduates. *International Journal of Current Research and Review*, pp.82-88. <https://doi.org/10.31782/IJCRR.2021.SP123>

Sullivan, P., Neale, M. and Kendler, K., 2000. Genetic Epidemiology of Major Depression: Review and Meta-Analysis. *American Journal of Psychiatry*, 157(10), pp.1552-1562. <https://doi.org/10.1176/appi.ajp.157.10.1552>

Szabó, M., 2009. The short version of the Depression Anxiety Stress Scales (DASS-21): Factor structure in a young adolescent sample. *Journal of Adolescence*, 33(1), pp.1-8. <https://doi.org/10.1016/j.adolescence.2009.05.014>

Taliaferro, L., Rienzo, B., Pigg, R., Miller, M. and Dodd, V., 2009. Associations Between Physical Activity and Reduced Rates of Hopelessness, Depression, and Suicidal Behavior Among College Students. *Journal of American College Health*, 57(4), pp.427-436. <https://doi.org/10.3200/JACH.57.4.427-436>

Taqi, A., Shaikh, M., Gowani, S., Shahid, F., Khan, A., Tayyeb, S., Satti, M., Vaqar, T., Shahid, S., Shamsi, A., Ganatra, H. and Naqvi, H., 2008. Body Dysmorphic Disorder: Gender differences and prevalence in a Pakistani medical student population. *BMC Psychiatry*, 8(1). <https://doi.org/10.1186/1471-244X-8-20>

Tasoula, E., Gregoriou, S., Chalikias, J., Lazarou, D., Danopoulou, I., Katsambas, A., & Rigopoulos, D. (2012). The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece: results of a population survey. *Anais Brasileiros de Dermatologia*, 87(6), 862–869. <https://doi.org/10.1590/S0365-05962012000600007>

Tatiana Soler, P., Novaes, J. and Miguel Fernandes, H., 2018. Influencing Factors of Social Anxiety Disorder and Body Dysmorphic Disorder in a Nonclinical Brazilian Population. *Psychological Reports*, 122(6), pp.2155-2177. <https://doi.org/10.1177/0033294118805003>

Veale, D., 2004. Body dysmorphic disorder. *Postgraduate Medical Journal*, 80(940), pp.67-71. <https://doi.org/10.1136/pmj.2003.015289>

Weingarden, H., Renshaw, K., Wilhelm, S., Tangney, J. and DiMauro, J., 2016. Anxiety and Shame as Risk Factors for Depression, Suicidality, and Functional Impairment in Body Dysmorphic Disorder and Obsessive-Compulsive Disorder. *Journal of Nervous & Mental Disease*, 204(11), pp.832-839. <https://doi.org/10.1097/NMD.0000000000000498>

Wilhelm, S., Greenberg, J. L., Rosenfield, E., Kasarskis, I., & Blashill, A. J. (2016). The Body Dysmorphic Disorder Symptom Scale: Development and preliminary validation of a self-report scale of symptom specific dysfunction. *Body Image*, 17, 82–87. <https://doi.org/10.1016/j.bodyim.2016.02.006>

World Health Organization. 2022. *Physical activity*. [online] Available at: <<https://www.who.int/news-room/fact-sheets/detail/physical-activity>> [Accessed 13 October 2022].

Yap, S., Foo, C. N., Lim, Y., Ng, F., Mohd Sidik, S., Tang, P., Najjar Singh, J. and Peh, K., 2021. Prevalence of Depression and its Associated Risk Factors among University Students in Malaysia: A Pilot Study. *Proceedings of The 3rd International Electronic Conference on Environmental Research and Public Health —Public Health Issues in the Context of the COVID-19 Pandemic*, [online] Available at: <<https://sciforum.net/manuscripts/9005/manuscript.pdf>> [Accessed 12 October 2022].

Zari, S., & Alrahmani, D. (2017). The association between stress and acne among female medical students in Jeddah, Saudi Arabia. *Clinical, Cosmetic and Investigational Dermatology*, Volume 10, 503–506. <https://doi.org/10.2147/CCID.S148499>

Zhang, Y., Peters, A., & Chen, G. (2018). Perceived Stress Mediates the Associations between Sleep Quality and Symptoms of Anxiety and Depression among College Nursing Students. *International Journal of Nursing Education Scholarship*, 15(1). <https://doi.org/10.1515/ijnes-2017-0020>

APPENDICES

Appendix A

Questionnaire of Study

PERSONAL DATA PROTECTION NOTICE

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:
 - a) Name
 - b) Identity card
 - c) Place of Birth
 - d) Address
 - e) Education History
 - f) Employment History
 - g) Medical History
 - h) Blood type
 - i) Race
 - j) Religion
 - k) Photo
 - l) Personal Information and Associated Research Data
2. The purposes for which your personal data may be used are inclusive but not limited to:
 - a) For assessment of any application to UTAR
 - b) For processing any benefits and services
 - c) For communication purposes
 - d) For advertorial and news
 - e) For general administration and record purposes
 - f) For enhancing the value of education
 - g) For educational and related purposes consequential to UTAR
 - h) For replying any responds to complaints and enquiries
 - i) For the purpose of our corporate governance
 - j) For the purposes of conducting research/ collaboration
3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.
4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.
7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
8. You may access and update your personal data by writing to us at_____.

Acknowledgment of Notice

- [] I have been notified and that I hereby understood, consented and agreed per UTAR above notice.
- [] I disagree, my personal data will not be processed.

.....
Name:
Date:

This questionnaire is consist of 10 pages.

There are FIVE sections in this questionnaire.

Section A: Socio-demographic factors

Section B: Body Dysmorphic Disorder

Section C: Physical activity level

Section D: Depression level

Section E: Social media used

Before answering the questions, kindly ensure that you are:

- Malaysian
- Undergraduates' student
- Non-pregnant woman
- Social media user
- Currently no receiving psychotherapy
- No current or past diagnosis of schizophrenia

If not, please inform the assessors.

If yes, kindly answer ALL of the following questions.

It will take around 10 to 15 minutes for you to answer the questions.

Name

UTAR email

Contact number

Section A Socio-demographic factors

Directions: Place a '√' mark in the box of your answer. Only ONE answer is allowed per question.

1. Gender:

- Male
- Female

2. Age

3. Faculty

- Faculty of Arts and Social Science (FAS)
- Faculty of Business and Finance (FBF)
- Faculty of Engineering and Green Technology (FEGT)
- Faculty of Information and Communication Technology (FICT)
- Faculty of Science (FSc)
- Institute of Chinese Studies (ICS)

4. Household monthly income

- B40: RM 1-4850
- M40: RM 4851-10,970
- T20: >RM 10,970 and above

5. Marital status:

- Single
- In a relationship
- Married
- Divorced
- Widowed

Section B Body Dysmorphic Disorder

Directions: Place a '√' mark in the box of your answer. Only ONE answer is allowed per question, unless it is specifically stated.

1. Are you concerned about the appearance of some part(s) of your body, which you consider especially unattractive?

- Not at all concerned
- Somewhat concerned
- Moderately concerned
- Very concerned
- Extremely concerned

2. Which aspect/feature (e.g. skin, hair, nose, teeth, body size: thin or fat etc) .You can list more than one.

3. If you are at least somewhat concerned, do these concerns preoccupy you? That is, you think about them a lot and they're hard to stop thinking about?

- Not at all
- Somewhat preoccupied
- Moderately preoccupied
- Very preoccupied
- Extremely preoccupied

4. Has your physical "defect" caused you a lot of distress, torment, pain or difficulty? How much?

- No distress
- Mild, and not too disturbing
- Moderate and disturbing, but manageable
- Severe, and very disturbing
- Extreme and disabling

5. Has your physical “defect” caused you impairment in your social, occupational or other important areas of functioning? How much?

- No limitation
- Mild interference, but overall performance not impaired
- Moderate, definite interference but still manageable
- Severe, causes substantial impairment
- Extreme, incapacitating

6. Has your physical “defect” significantly interfered with your social life? How much?

- Never
- Occasionally
- Moderately often
- Often
- Very often

7. Has your physical “defect” significantly interfered with your education or your ability to function in your role? How much?

- Never
- Occasionally
- Moderately often
- Often
- Very often

8. Do you ever avoid things because of your physical “defect”? How often?

- Never
- Occasionally
- Moderately often
- Often
- Very often

Section C: Physical Activity Questionnaire

Questions below will be asking on how much time you have spent being physically active in the last 7 days.

The questions will ask you about the time you spent being physically active in the last 7 days.

Directions: Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Vigorous physical activity

Think about all the vigorous activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling? (eg.3) **If no just put 0.*

_____ days per week

2. How much time did you usually spend doing vigorous physical activities on one of those days? (eg. 30) **If you answered 0 for the first question above, put 0 in this question.*

_____ minutes per day

Moderate activities

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking. (eg.3) **If no just put 0.*

_____ days per week

4. How much time did you usually spend doing moderate physical activities on one of those days? (eg.30) **If you answered 0 for the first question above, put 0 in this question.*

_____ minutes per day

Walking

Think about the time you spent walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time? (eg.3) **If no just put 0.*

_____ days per week

6. How much time did you usually spend walking on one of those days? (eg.30) **If you answered 0 for the first question above, put 0 in this question.*

_____ minutes per day

Sitting

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. During the last 7 days, how much time did you spend sitting on a week day? (eg.30)

_____ minutes per day

Section D: Depression Questionnaire

Directions: Please read each statement carefully and tick (✓) on the boxes for 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

- 0- Did not apply to me at all
- 1- Applied to me to some degree, or some of the time
- 2- Applied to me to a considerable degree or a good part of time
- 3- Applied to me very much or most of the time

Statement	0	1	2	3
I found it hard to wind down				
I was aware of dryness of my mouth				
I couldn't seem to experience any positive feeling at all				
I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)				
I found it difficult to work up the initiative to do things				
I tended to over-react to situations				
I experienced trembling (e.g. in the hands)				
I felt that I was using a lot of nervous energy				
I was worried about situations in which I might panic and make a fool of myself				
I felt that I had nothing to look forward to				
I found myself getting agitated				
I found it difficult to relax				
I felt down-hearted and blue				
I was intolerant of anything that kept me from getting on with what I was doing				
I felt I was close to panic				
I was unable to become enthusiastic about anything				
I felt I wasn't worth much as a person				
I felt that I was rather touchy				
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)				
I felt scared without any good reason				
I felt that life was meaningless				

Appendix B

Ethical Approval Letter from UTAR



UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)
Wholly owned by UTAR Education Foundation Co. No. 578227-M

Re: U/SERC/209/2022

3 November 2022

Dr Teh Lai Kuan
Head, Department of Allied Health Sciences
Faculty of Science
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak.

Dear Dr Teh,

Ethical Approval For Research Project/Protocol

We refer to the application for ethical approval for your students' research projects from Bachelor of Science (Hons) Dietetics programme enrolled in course UDDN3108. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Association Between Depression and Added Sugar Intake Among Undergraduate Students	Chow Wan Yee	Dr Tan Chin Xuan	3 November 2022 – 2 November 2023
2.	Knowledge of Malaysian University Students Toward the Role of Dietary and Lifestyle Behaviors in Colorectal Cancer: A Cross-sectional Study	Lim Xin Yuan		
3.	The Relationship Between Eating Disorders, Stress, and Physical Activity Among Undergraduate Students in Malaysia	Goh Yining		
4.	Association Between Mindful Eating and Depressive Symptoms Among University Students	Sun Jia Yang		
5.	Association Between Physical Habits and Dietary Behaviors with Stress Levels Among Malaysian Young Adults	The Geik Qi		
6.	Knowledge, Attitude, and Practices Regarding the Risk of Cardiovascular Disease Among UTAR Students in Kampar, Perak	Chong Jing Yu	Mr Cheah Khang Jin	
7.	Nutritional Knowledge, Attitude and Practice Related to COVID-19 Among Young Adults in Malaysia	Tey Haw Tsyi	Dr Chang Sui Kiat	
8.	Association Between Weight Status and Social Media with Body Dysmorphic Disorder (BDD) Among UTAR Undergraduate Students	Chong Wan Lin		
9.	Associations Between Socio-demographic Factors with Body Dysmorphic Disorder (BDD) Among UTAR Kampar Undergraduate Students	Ng Jia Poh		
10.	Association Between Physical Activity and Depression with Body Dysmorphic Disorder (BDD) Among UTAR Undergraduate Students	Phua Jia Ying		
11.	The Association Between Psychological Distress, Sleep Quality, and Night Eating Syndrome (NES) Among Undergraduates in University Tunku Abdul Rahman (UTAR), Kampar Campus	Chow Hor Yan		

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my



No	Research Title	Student's Name	Supervisor's Name	Approval Validity
12.	The Association Between the Physical Activity, Body Weight Status with Night Eating Syndrome (NES) Among Undergraduates in University Tunku Abdul Rahman (UTAR), Kampar	Lim An Ting	Dr Chang Sui Kiat	3 November 2022 – 2 November 2023
13.	The Association Between Sociodemographic Factors and Night Eating Syndrome (NES) Among Undergraduates in University Tunku Abdul Rahman (UTAR), Kampar Campus	Linett Chan Wei Er		
14.	Dietary Supplement Use, Knowledge and Perceptions Among Students of Faculty of Science at University Tunku Abdul Rahman (UTAR)	Chew Pei Yi	Dr Chee Huei Phing	
15.	Factors Associated with Dietary Supplement Use Among University Students at University Tunku Abdul Rahman (UTAR)	Ch'ng Jing Xuan		
16.	Knowledge, Perceptions and Usage of Dietary Supplements Use Among Students of University of Tunku Abdul Rahman (UTAR)	Hong Soo Keat		
17.	Assessment of Knowledge, Attitude and Practice of Dietary Supplement Use Among Health Science Undergraduates in Universiti Tunku Abdul Rahman (UTAR)	Low Xiang Yi		
18.	Knowledge, Attitude and Practices (KAP) of Dietary Supplements use among University Students in Kampar, Perak	Yap Zhi Qian		

The conduct of this research is subject to the following:

- (1) The participants' informed consent be obtained prior to the commencement of the research;
- (2) Confidentiality of participants' personal data must be maintained; and
- (3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.
- (4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,



Professor Ts Dr Faiz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Science
Director, Institute of Postgraduate Studies and Research

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my



Appendix C

Normality Test Result

Table C.1: Normality Test Result

	Kolmogorov-Smirnov^a
	Sig.
BDD	0.010
Physical Activity	0.000
Depression	0.000

^aLilliefors Significance Correction

Appendix D

Variable View in SPSS Version 26.0

*Data (Updated).sav [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	BDDScore	Numeric	8	1	BDD	None	None	8	Center	Scale	Input
2	BDD	Numeric	8	0	BDD (Category)	{1, Yes}...	None	8	Center	Nominal	Input
3	PAScore	Numeric	8	2	Physical Activit...	None	None	8	Center	Scale	Input
4	PACategory	Numeric	8	0	Physical Activit...	{1, Inactive}...	None	8	Center	Nominal	Input
5	Deprx2	Numeric	8	0	Depression	None	None	8	Center	Scale	Input
6	DepCategory	Numeric	8	0	Depression Cat...	{1, Normal}...	None	8	Center	Nominal	Input
7	Bodypart	Numeric	8	0	Body part conc...	{1, Body siz...	None	8	Center	Nominal	Input
8	VigMET	Numeric	8	0	Vigorous intens...	None	None	8	Center	Scale	Input
9	ModerateMET	Numeric	8	0	Moderate inten...	None	None	8	Center	Scale	Input
10	WalkMET	Numeric	8	0	Walking	None	None	8	Center	Scale	Input
11	Gender	Numeric	8	0	Gender	{1, Male}...	None	8	Center	Nominal	Input
12	Age	Numeric	7	0	Age	None	None	6	Center	Scale	Input
13	Q1	Numeric	8	0	Question 1	{1, Not at all...	None	5	Center	Scale	Input
14	Q2	Numeric	8	0	Question 2	{1, Not at all...	None	5	Center	Scale	Input
15	Q3	Numeric	8	0	Question 3	{1, No distre...	None	4	Center	Scale	Input
16	Q4	Numeric	8	0	Question 4	{1, No limita...	None	5	Center	Scale	Input
17	Q5	Numeric	8	0	Question 5	{1, Never}...	None	5	Center	Scale	Input
18	Q6	Numeric	8	0	Question 6	{1, Never}...	None	5	Center	Scale	Input
19	Q7	Numeric	8	0	Question 7	{1, Never}...	None	5	Center	Scale	Input
20	Faculty	Numeric	8	0	Faculty	{1, FAS}...	None	7	Center	Scale	Input
21	QD1	Numeric	8	0	Depression Q1	{0, Did not a...	None	5	Center	Scale	Input
22	QD2	Numeric	8	0	Depression Q2	{0, Did not a...	None	5	Center	Scale	Input
23	QD3	Numeric	8	0	Depression Q3	{0, Did not a...	None	5	Center	Scale	Input
24	QD4	Numeric	8	0	Depression Q4	{0, Did not a...	None	5	Center	Scale	Input
25	QD5	Numeric	8	0	Depression Q5	{0, Did not a...	None	5	Center	Scale	Input
26	QD6	Numeric	8	0	Depression Q6	{0, Did not a...	None	5	Center	Scale	Input
27	QD7	Numeric	8	0	Depression Q7	{0, Did not a...	None	5	Center	Scale	Input
28											
29											

1

Data View Variable View

Appendix E

Data View in SPSS Version 26.0

Data (Updated).sav [DataSet] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Extensions Window Help

51 : Age 19

#	BDDScore	BDD	PAScore	PACategory	Deprx2	DepCategory	Bodypart	VigMET	Moderate MET	WalkMET	Gender	Age
1	2.1	2	1272.00	2	14	3	1	240	240	792	2	19
2	2.9	2	3946.00	3	2	1	2	1600	960	1386	1	21
3	1.7	2	1884.00	2	6	1	2	960	0	924	1	22
4	2.0	2	.00	1	24	4	3	0	0	0	1	21
5	1.4	2	412.50	1	4	1	4	0	0	413	1	19
6	2.7	2	933.00	2	22	4	1	0	240	693	1	20
7	2.9	2	4902.00	3	8	1	3	2880	636	1386	1	19
8	1.0	2	2613.00	2	12	2	1	1920	0	693	1	20
9	3.3	1	466.50	1	22	4	2	0	120	347	1	20
10	2.4	2	462.00	1	16	3	3	0	0	462	1	20
11	1.4	2	26.40	1	0	1	6	0	0	26	2	21
12	1.4	2	297.00	1	8	1	4	0	0	297	2	21
13	1.3	2	1047.50	2	0	1	1	720	80	248	2	20
14	1.0	2	600.00	1	10	2	7	240	360	0	2	24
15	2.7	2	231.00	1	14	3	1	0	0	231	2	19
16	1.6	2	245.00	1	6	1	8	80	0	165	2	19
17	2.1	2	159.00	1	2	1	2	60	0	99	2	21
18	2.0	2	330.00	1	2	1	3	0	0	330	2	21
19	2.4	2	2733.00	2	18	3	5	240	1800	693	2	21
20	2.0	2	198.00	1	10	2	2	0	0	198	2	20
21	2.3	2	1866.00	2	30	5	1	0	480	1386	1	21
22	2.1	2	942.00	1	10	2	2	0	480	462	2	21
23	2.3	2	933.00	2	4	1	3	160	80	693	2	21
24	1.7	2	208.50	1	0	1	1	0	60	149	2	23
25	1.9	2	60.00	1	6	1	8	0	60	0	2	21
26	3.1	1	3273.00	3	26	4	2	2400	180	693	2	23
27	2.0	2	1866.00	2	8	1	1	0	480	1386	2	20

Data View Variable View

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Faculty	QD1	QD2	QD3	QD4	QD5	QD6	QD7
1	2	1	2	3	3	2	2	2	2	2	1	1	1	0	0
2	4	3	3	2	3	2	3	2	0	1	0	0	0	0	0
3	3	2	1	1	2	2	1	2	0	1	0	0	0	1	1
4	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1
5	3	1	1	1	2	1	1	2	1	1	0	0	0	0	0
6	3	3	3	2	2	2	4	2	2	3	0	2	1	3	0
7	3	3	3	2	3	3	3	2	1	1	0	1	0	0	1
8	1	1	1	1	1	1	1	2	0	1	2	0	1	1	1
9	4	3	4	3	3	2	4	2	2	2	2	1	1	1	2
10	4	3	3	2	2	1	2	2	2	3	2	1	0	0	0
11	2	2	2	1	1	1	1	2	0	0	0	0	0	0	0
12	2	2	2	1	1	1	1	2	0	2	1	1	0	0	0
13	1	2	1	2	1	1	1	2	0	0	0	0	0	0	0
14	1	1	1	1	1	1	1	2	0	1	1	0	1	1	1
15	3	3	3	2	3	2	3	2	1	2	1	1	1	1	0
16	3	2	2	1	1	1	1	2	0	2	1	0	0	0	0
17	3	2	3	2	2	1	2	2	0	1	0	0	0	0	0
18	4	3	3	1	1	1	1	2	1	0	0	0	0	0	0
19	5	4	3	1	1	1	2	2	2	3	0	1	1	0	2
20	3	2	2	2	2	1	2	2	0	1	0	3	1	0	0
21	3	1	1	2	2	4	3	1	3	2	3	2	1	3	1
22	3	2	3	2	2	2	1	5	1	3	0	1	0	0	0
23	2	3	2	2	3	1	3	5	1	1	0	0	0	0	0
24	2	2	2	1	1	2	2	6	0	0	0	0	0	0	0
25	2	2	2	2	2	1	2	4	0	1	1	0	0	1	0
26	3	3	3	3	3	2	5	2	2	2	3	1	0	2	3
27	2	2	2	2	2	1	3	2	1	1	0	1	0	1	0

Data View Variable View

Appendix F

Output View in SPSS Version 26.0

The screenshot displays the IBM SPSS Statistics Viewer interface. The left pane shows a tree view of the output, and the right pane displays four tables:

Statistics

		BDD (Category)	Physical Activity (Category)	Depression Category
N	Valid	106	106	106
	Missing	0	0	0

Frequency Table

BDD (Category)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	4.7	4.7	4.7
	No	101	95.3	95.3	100.0
Total		106	100.0	100.0	

Physical Activity (Category)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inactive	44	41.5	41.5	41.5
	Min	48	45.3	45.3	86.8
	HEPA	14	13.2	13.2	100.0
Total		106	100.0	100.0	

Depression Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	60	56.6	56.6	56.6
	Mild	17	16.0	16.0	72.6
	Moderate	16	15.1	15.1	87.7

Appendix G

Turnitin Report

4/28/23, 4:11 PM

Turnitin - Originality Report - FYP Thesis

Turnitin Originality Report Document Viewer

Processed on: 29-Apr-2023 16:10 +08
ID: 2079070575
Word Count: 12006
Submitted: 1

FYP Thesis By Ja Ying Phua

2/5/23

Similarity Index

9%

Similarity by Source	
Internet Sources:	8%
Publications:	8%
Student Papers:	5%

exclude quoted | exclude bibliography | mode: quickview (classic report) | print | refresh

download

- 2% match (student papers from 26-Apr-2023)
Class: Dietetics FYP
Assignment: FYP Thesis
Paper ID: [2076584974](#)
- 1% match (Internet from 06-Dec-2012)
<https://www.cha.gov.hk>
- 1% match (Encyclopedia of Adolescence, 2011.)
[Encyclopedia of Adolescence, 2011.](#)
- 1% match (Internet from 14-Jan-2023)
<https://core.ac.uk/download/pdf/131177389.pdf>
- <1% match (student papers from 28-Aug-2022)
[Submitted to Universiti Tunku Abdul Rahman on 2022-08-28](#)
- <1% match (Andri S. Bjornsson, Elizabeth R. Didie, Katharine A. Phillips. "Body dysmorphic disorder", Dialogues in Clinical Neuroscience, 2022)
[Andri S. Bjornsson, Elizabeth R. Didie, Katharine A. Phillips. "Body dysmorphic disorder", Dialogues in Clinical Neuroscience, 2022](#)
- <1% match (Cash, T.F., "Measuring "negative body image": validation of the Body Image Disturbance Questionnaire in a nonclinical population", Body Image, 200412)
[Cash, T.F., "Measuring "negative body image": validation of the Body Image Disturbance Questionnaire in a nonclinical population", Body Image, 200412](#)
- <1% match (Internet from 22-Nov-2022)
https://uir.unisa.ac.za/bitstream/handle/10500/27130/thesis_shumba_s.pdf?isAllowed=y&sequence=1
- <1% match (Internet from 28-Jan-2023)
https://www.researchgate.net/publication/5848163_Depression_Anxiety_and_Stress_Scales_DASS-21_Psychometric_analysis_across_four_racial_groups
- <1% match ()
[Cerea, Silvia, "The meaning of beauty: when the problem is with body image. Prevalence, clinical features, and at risk populations of Body Dysmorphic Disorder in the Italian context", 2017](#)
- <1% match (Internet from 16-Jul-2022)
<https://jkonnect.uj.ac.za/vital/access/services/Download/uj:45199/SOURCE1>
- <1% match (Antonia Diagnikova, Rudolph Leon Van Niekerk. "The prevalence of body dysmorphic disorder among South African university students", South African Journal of Psychiatry, 2015)
[Antonia Diagnikova, Rudolph Leon Van Niekerk. "The prevalence of body dysmorphic disorder among South African university students", South African Journal of Psychiatry, 2015](#)
- <1% match (Internet from 04-Oct-2022)
<https://acervo-digital.esom.br/Arquivos/ABT/313530.pdf>
- <1% match (student papers from 17-Aug-2021)
[Submitted to Kaplan College on 2021-08-17](#)
- <1% match (Internet from 15-Jan-2022)
<http://rlone.ufrb.br>
- <1% match (Internet from 30-Mar-2023)
<http://eprints.utar.edu.my>
- <1% match (Internet from 27-May-2021)
https://uir.unisa.ac.za/bitstream/handle/10500/27130/thesis_shumba_s.pdf?isAllowed=y&sequence=3
- <1% match (Internet from 29-Mar-2023)
<https://www.science.gov/topicpages/o/physical+activity+surveys>

https://www.turnitin.com/newreport_classic.asp?lang=en_us&id=2079070575&ft=1&bypass_cv=1

1/9

Appendix H

Originality Form

Universiti Tunku Abdul Rahman			
Form Title : Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)			
Form Number: FM-IAD-005	Rev No.: 1	Effective Date: 3/10/2019	Page No.: 1 of 1



FACULTY OF SCIENCE

Full Name(s) of Candidate(s)	PHUA JIA YING
ID Number(s)	19ADB01815
Programme / Course	Bachelor Degree (HONS) Dietetics
Title of Final Year Project	Association Between Physical Activity and Depression with Body Dysmorphic Disorder Among UTAR Undergraduate Students

Similarity	Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)
Overall similarity index: <u> 9 </u> % Similarity by source Internet Sources: <u> 8 </u> % Publications: <u> 8 </u> % Student Papers: <u> 5 </u> %	
Number of individual sources listed of more than 3% similarity: <u> 0 </u>	
Parameters of originality required and limits approved by UTAR are as follows: (i) Overall similarity index is 20% and below, and (ii) Matching of individual sources listed must be less than 3% each, and (iii) Matching texts in continuous block must not exceed 8 words <i>Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.</i>	

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

Signature of Supervisor
Name: Dr Chang Sui Kiat

Signature of Co-Supervisor
Name: _____

Date: 1st May 2023

Date: _____