UNIVERSITI PUTRA MALAYSIA

MENTAL HEALTH AND SOCIAL MEDIA USE AMONG UNIVERSITI PUTRA MALAYSIA UNDERGRADUATE STUDENTS

GROUP 9

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CERTIFICATION

It is hereby certified that we have read the project dissertation entitled **"MENTAL HEALTH AND SOCIAL MEDIA USE AMONG UNIVERSITI PUTRA MALAYSIA UNDERGRADUATE STUDENTS"** by Reenna Raj A/P C Rajaram, Gan Woon Rie and Nurul Iman Sofea Binti Suhaimi. In our opinion, it is satisfactory in terms of scope, quality and presentation as required by our module MDR 3901

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DECLARATION

We declare that the project is our original work except for quotations and citations which have been duly acknowledged. We also declare that it has not been previously and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institutions.

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ACKNOWLEDGEMENT

We would like to express our deepest gratitude to all those who gave us the opportunity to conduct this research. First and foremost, we would like to acknowledge Prof. Dr. Zamberi Sekawi, the Dean of the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia for giving us permission to conduct this study.

We would like to thank our supervisor, Dr. Ahmad Zaid Fattah for helping and guiding us throughout this research. We were deeply touched as Dr. Zaid was ever willing to share his knowledge, experiences and spend his precious time helping us with this thesis. In addition, we would like to thank all the respondents who willingly participated in our study.

We would also like to acknowledge our module coordinator of Research Methodology, Assoc. Prof. Dr. Kulanthayan K.C. Mani for efficiently coordinating the progress of our research. He scheduled our research precisely and always ensured that we are able to carry out the research accordingly despite it having to be conducted whilst the pandemic. Special thanks also to all the lecturers of Universiti Putra Malaysia who judged us during thesis presentation sessions. Their beneficial advice and positive criticisms have been very helpful in improving this thesis.

Finally, we would like to acknowledge the help, support and contribution that we obtained from all individuals towards completing the research including family and friends. Without all of their support, we might not be able to complete this research on time. The good teamwork shown among the group members was highly appreciated, as unity and cooperation are essential in making the team triumph in this project.

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MENTAL HEALTH AND SOCIAL MEDIA USE AMONG UNIVERSITI PUTRA MALAYSIA UNDERGRADUATE STUDENTS

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ABSTRACT

Introduction: Mental health problems are highly prevalent among young adults with up to 25% experiencing a mental health problem in a given year. As reported by the World Health Organization (WHO), half of all mental illnesses begin by the age of 13 and three-quarters by mid20s. The volume of social media use (SMU), encompassing metrics of quantity, have been associated with increased risk for both depression, anxiety and stress among young adults. Many studies have shown that greater daily time spent on social media, increased frequency of Social Media Use (SMU), and multiple platform use were associated with both depression, anxiety and stress. Depression, anxiety and stress in youth may be caused by a lot of factors. Another factor that is poorly researched on could be social media use, which will be the focus of the study. **Objective**: The aim of this study was to determine the association between social media use and mental health among undergraduate students in UPM. **Materials & Methods**: A cross sectional study was conducted among undergraduate students of Universiti Putra Malaysia. The stratified random sampling was used to divide all the undergraduate students into homogeneous strata. A google form questionnaire was used. Data was analysed using SPSS Statistics version 26.0 for windows. **Results**: The response rate was 101%. The respondents consist of mostly Malays, female, and second year students of UPM. As for sociodemographic factors, there is an association between gender and faculty of study with mental health problems such as depression, anxiety and stress among undergraduate students of UPM. There was a weak positive relationship between updating Facebook and depression but not statistically significant ($r = 0.046$, $p\ Q1 = 0.207$). However, there was a very weak negative relationship between time spent to update on Facebook and stress level and was not statistically significant ($r = -0.019$, $p = 0.599$). There is a significant association between updating on Instagram and stress level although the correlation is weak and negative ($r = -0.073$, $p = 0.036$). Nevertheless, there is a significant relationship between updating Twitter and stress level and negatively correlated ($r = -0.112$, $p = 0.011$). **Conclusion**: Undergraduates of female gender, students from Faculty Design and Architecture and Faculty Veterinary Medicine, number of friends on Facebook, number of followers on Instagram, frequency of updating posts on Instagram and on Twitter has significant association with mental health problems. We concluded that there is an association between social media use (SMU) and mental health problems among undergraduate students of UPM. Future study is suggested to increase and raise awareness regarding mental health by educating the public and not solely to undergraduate students only.

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LIST OF ABBREVIATION

UPM - Universiti Putra Malaysia

WHO - World Health Organisation

SAD - Seasonal affective disorder

SMU - Social Media Use

SNS - Social Networking Sites

GAD - Generalised Anxiety Disorder

PTSD - Post-traumatic Stress Disorder

ADHD - Attention-deficit/ hyperactivity disorder

APA - American Physiological Association

DAS - Depression Anxiety and Stress

DASS-42 - Depression Anxiety Stress Scale 42 Questions

QOL - Quality of Life

IBM - International Business Machines Corporations

SPSS - Statistical Package for the Social Science

JKEUPM - Jawatankuasa Etika Universiti untuk Penyelidikan Melibatkan Manusia

COVID-19 - Coronavirus Disease 2019

B40 – Bottom 40%

M40 – Middle 40%

T20 – Top 20%

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Executive Summary

A large percentage of undergraduate students use social media, such as Facebook, Instagram and Twitter on a daily basis. Research suggests that increased usage of social media among college students have caused detrimental effects on their mental health such as depression, anxiety and stress.

This study will be conducted among the undergraduate students of Universiti Putra Malaysia to determine factors associated with excessive usage of social media and its association with the occurrence of depression, anxiety and stress. Therefore, this may lead to a need to plan awareness programs on usage of social media and to increase the knowledge on mental health effects among the college students population.

A cross-sectional study design will be done for this study. Undergraduate students from each faculty will be our sample population for our research. Online questionnaires will be given via respective faculty's Whatsapp group and also passed to the student representative of each faculty. In this study, the data will be analysed with IBM Statistical Package for the Social Science (SPSS) version 26.0. The analysis will be analyzed based on descriptive and analytical analysis.

This study focuses on undergraduate students of Universiti Putra Malaysia, hence the result of this study may be limited to the UPM undergraduate students' state of health only. Besides, the causal relationship cannot be determined by the design of this study which is a cross-sectional study.

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CHAPTER 1 - INTRODUCTION

1.1 Background

Depression and related mental illnesses can have a significant impact on all facets of life, including academic results, job productivity, family and friend relationships, and the ability to engage in the community (The World Health Organization, WHO 2017). It is stated by Our World in Data (2018) that among 3.4% of people across the world experiencing depression, females also are dominant with a prevalence of 4.1% compared to males with a percentage of only 2.7%. Based on the Mental Health Foundation (2018), 74% of people in the United Kingdom (n=4619) have at certain point experienced being very stressed that they felt overwhelmed or unable to cope. Based on Salari et. al (2020) also, the highest prevalence of anxiety is from Asia with the prevalence of 32.9 (95% CI: 28.2-37.9) compared to Europe with 23.8% (95% CI: 16.2-33.5). Musun et al. (2019) stated that prevalence of stress varies from 14.56% in Malaysia. According to the World Health Organisation (WHO, 2017), the percentage of the world population with anxiety disorders in 2015 is estimated at 3.6%. Based on another study carried by Nahas A. M., et. al. (2019), the prevalence of depressive disorder among health science students at International Islamic University Malaysia was 36.4% with a response rate of 85.9% (n=365). Nearly 70% of Americans enroll in college immediately after high school, and about three-quarters of lifetime cases of psychological disorders begin by age 24. At the same time, the demand for therapy services has been gradually growing. Some have seen these developments as a mental health issue that requires prompt investigation and the generation of new solutions to meet student needs (Lattie EG, Lipson SK and Eisenberg D, 2019). According to a study carried out in Selangor, Malaysia, with the respondent number of 1556 out of 2512 participants being approached (61.9%), a prevalence of 8.2% of them are having anxiety. Results have shown that college students have a mild level of anxiety, a significant level of depression, and a moderate level of stress. Half were not aware of the existence of psychological support services, although 54.4% reported that they had issues (Dalky, HF, Gharaibeh, A, 2018). In recent years, there has been a rise in signs of depression, anxiety, eating disorders, and other mental illnesses among college student populations.

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Based on Dubras (2019), overall prevalence of social media in the UK market increases from 1% over the last year, moving from 66% of the total population (all ages) in 2018 to 67% by January 2019. The number of social media users in Malaysia increased by 1.0 million (+ 4.1 percent) between April 2019 and January 2020 compared to 27.46 percent in 2018, according to Digital Malaysia (2020). It also reveals that, in January 2020, there were 26 million social media users in Malaysia. Social networking sites such as Facebook, Instagram, Twitter and more offer people the opportunity to communicate through distances with each other. In other words, all due to social media, the whole world is at the hands of people. In particular, young people are among the most influential consumers of social media. In reality, a review performed by Berryman et al. (2018) said that many parents, activists and policy makers have raised concerns about the possible negative effects of the use of social media in recent years. This research subsequently linked the increase in symptoms observed with the omnipresent increase in the use of personal computer technology, including social media, and indicated that time spent on these types of technologies is directly associated with poor mental health. A cross sectional study on the prevalence and pattern of social media that was performed by Masoud M. et al. (2019) revealed that majority of the students in University of Fayoum, Egypt (94.2%) were at least using one type of social media and about one-third of the respondents (30.9%) spent almost 3-4 hours of their day using the social media. While the usage of personal computer technology has significantly changed the environment in which college students engage and tend to have some mental health detriments, the same technologies still provide a range of opportunities for improving mental health and mental disorder care (Lattie EG, Lipson SK and Eisenberg D ,2019). We found that problematic smartphone use was significantly associated with lower self-esteem, higher impulsive problems (ADHD and Barratt Impulsiveness Scale scores), depression, anxiety, and PTSD with respect to other mental health issues. Problematic smartphone use was substantially associated with depression, anxiety, and lower than anticipated self-esteem in a previous meta-analysis of the literature (Elhai et al., 2017).

A research conducted by Shensa et al. (2019) claims that higher social media use level has been significantly linked to elevated depression. Given the prevalence of social media, it is important to define the dynamics and course of this association to inform initiatives that tackle the use and depression of social media. Shensa et al. (2019) also stated that by transmitting a

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signal to the chemoreceptor trigger zone (CTZ) through the medulla and cerebral cortex and limbic system, excessive social media use is believed to be a threat to health by inducing nausea and vomiting. In a social media world, multiple studies have shown a correlation between anxiety and various patterns of behaviors of individuals. In order to educate others about their mental states, request social help, as well as keep track of their everyday activities, desires, and interests, people are increasingly using social media sites.With regard to stress, social media posts on activities such as travel and work have predicted the linguistic features of event-related stress (Lin et al 2014), but these results can not be extended to enhance the psychological perception of stress, since people suffering from chronic stress do so regardless of stressful events. It could be more helpful to differentiate between positive and harmful use of social media, rather than thinking of social media as inevitably causing poor mental health. Some research, for instance, indicates that the use of Facebook is only detrimental to mental health when it is passive consumption of posts from other people as opposed to more active involvement in social interactions (Lattie EG, Lipson SK and Eisenberg D ,2019). Some experts have cautioned about the possible adverse impact on human health because of the excessive use of social media. The effect of social media on students has recently been recognized and researchers have been motivated to explore how students are impacted by the use of social media in various ways (Alwagait, Shahzad, & Alim, 2015). Greater social media use predicts depressive symptoms and has been shown to be positively related to anxiety and depression and the diurnal cortisol output was found to be directly proportional to the number of friends on Facebook by Morin-Major et al.(2016). Negative comparisons may be the root cause of depression or anxiety linked to social media. This generates similarities and the feeling of being more fortunate and blessed than others. As reported by Seabrook et al. (2016) and Appel et al., such negative comparisons and peer reviews could underlie potential associations between social media and anxiety and depression (2016).

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1.2 Problem Statement

In the U.S. and internationally, depression and other mental health concerns such as anxiety and stress are a significant public health issue. While successful early diagnosis and treatment can contribute to several positive health and behavioral results, due to many factors, including denial of the disease as well as cultural and social stigma, this remains undiagnosed, untreated or undertreated. In people with severe mental disorders, social media use has been reported to be independent of psychological well-being or clinical symptoms. Social support is another principal factor affecting the relationship between the use of social media and mental health. Social networking helps teenage users to reinforce connections with existing friends and to develop new online friendships, which minimize social isolation and loneliness, and indirectly enhance mental health, according to a study published by the American Academy of Pediatrics (O'Keeffe & Clarke-Pearson, 2011). In a study conducted in April 2020, Jichang Zhao notes that millions of people now share their online identity with the ubiquity of social media sites by sharing their opinions, moods, feelings, and even their everyday mental health challenges on social media. The same study on teenagers and young adults with mental disorders have indicated that almost all of them use social media extensively, with an average of 2.6 hours a day.The prevalence of anxiety and depression has risen by 70 percent in young people in the past 25 years, according to the Royal Society for Public Health & Young Health Movement (2017). Depression and anxiety have adverse effects on adolescent development, including decreased educational achievement, dropping out of school, disrupted social relationships, and increased risk of drug addiction, mental health issues, and suicide (Copeland, Angold, Shanahan, & Costello, 2014; Gore et al., 2011; Hetrick, Cox, Witt, Bir, & Merry, 2016). In contrast to those with high social support from relatives, friends and neighbors, studies show that those with low social support are more likely to suffer from mental health issues (e.g. depression, anxiety and psychological distress) (Klineberg et al., 2006; Maulik, Eaton, & Bradshaw, 2011). There are several previous studies carried out, but not directly among undergraduate students of Universiti Putra Malaysia, on how social media affects students' mental health, specifically on the prevalence of depression, anxiety and stress. Not only that, there is not much data or literature that highlights the topic on social media or even about social media being a major issue. It has become so overlooked in the society that humans fail to understand the association between

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social media and the occurrence of depression, anxiety and stress especially among students who are the major users of social media. We are willingly and strongly enthusiastic to conduct the research with our effort and current study to see if the relationship between social media and depression, anxiety and stress among undergraduate students from Universiti Putra Malaysia is becoming greater and more significant. This research is therefore primarily intended to demonstrate the relationship of undergraduate students of Universiti Putra Malaysia between social media and depression, anxiety and stress.

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1.3 Significance of Study

In preventing suicides, the proper diagnosis and treatment of depression is very critical. 45 percent of people who commit suicide are suffering from some type of mental disorder, according to the National Alliance on Mental Illness. And this concerns individuals with depression that are undiagnosed, untreated, or under-treated. This study will determine the association between social media and depression, anxiety and stress among Universiti Putra Malaysia undergraduate students. This study specifically involves undergraduate students in Universiti Putra Malaysia. Our study is to provide information and data on the psychological and mental state of undergraduate students who are active on social media platforms like Facebook, Twitter and Instagram. This study is very crucial as depression, anxiety and stress has been alarming from not only undergraduate students but also up to workers who were previously students who graduated. However, our study will be based on the basics which are the students, specifically undergraduate students of Universiti Putra Malaysia.

We are all pretty aware that a good and healthy psychological well-being is important for students as they are the future generation of the world and their mental health surely will impact their performances as a professional and also as the leaders of the world in the future. This study believes to provide a strong association between social media and depression,anxiety and stress thus knowing the wide range of the depressive, anxiety and stress symptoms experienced by undergraduate students who are always indulged in social media. This information hopefully can be used to raise awareness and definitely to stress on the importance of good psychological well-being and a healthy mind. The data obtained from this study can surely be used to find solutions to cope with depression, anxiety and stress among undergraduate students in Universiti Putra Malaysia to be able to help the students as well to create a better future for them and also definitely for the betterment of the future generation of this world.

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1.4 Research Questions

1. What is the prevalence of depression, anxiety and stress among undergraduate students in Universiti Putra Malaysia (UPM)?

2. What is the pattern of social media use among undergraduate students in UPM?

3. What is the relationship between social media use (SMU) and depression, anxiety and stress?

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1.5 Study Objective

1.5.1 General Objective

The aim of the study is to determine social media use (SMU) and its association with depression, anxiety and stress among Universiti Putra Malaysia (UPM) Undergraduate Students.

1.5.2 Specific Objective

1. To determine the level of social media (Facebook, Instagram and Twitter) use among undergraduate students in UPM.

2. To determine the prevalence of depression, anxiety and stress among undergraduate students in UPM.

3. To assess the association between the levels of depression, anxiety and stress among undergraduate students in UPM with their Facebook usage.

4. To assess the association between the levels of depression, anxiety and stress among undergraduate students in UPM with their Instagram usage.

5. To assess the association between the levels of depression, anxiety and stress among undergraduate students in UPM with their Twitter usage.

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1.6 Hypothesis

1.6.1 Alternative Hypothesis

1. There is an association between Facebook use, Instagram use and Twitter use with the levels of depression, anxiety and stress among undergraduate students in UPM.

2. There is an association between the usage hours of Facebook, Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

3. There is an association between the number of friends on Facebook and the levels of depression, anxiety and stress among undergraduate students in UPM.

4. There is an association between the number of followers on Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

5. There is an association between the number of following in Facebook, Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

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1.6.2 Null Hypothesis

1. There is no association between Facebook use, Instagram use and Twitter use with the levels of depression, anxiety and stress among undergraduate students in UPM.

2. There is no association between the usage hours of Facebook, Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

3. There is no association between the number of friends on Facebook and the levels of depression, anxiety and stress among undergraduate students in UPM.

4. There is no association between the number of followers on Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

5. There is no association between the number of following in Facebook, Instagram and Twitter with the levels of depression, anxiety and stress among undergraduate students in UPM.

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CHAPTER 2 - LITERATURE REVIEW

2.1 Social media

Social media is classified as websites and software programs used for social networking, according to the Oxford Dictionary. Alamri (2019) stated that various studies manifest there has been an increased social networking usage by students to perform academic activities such assignments, learning, and research (Ali, Raja, Nuri Al Amin, & Iftikhar, 2017; Alwagait et al., 2015; Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013; LeyrerJackson & Wilson, 2018; Paul, Baker, & Cochran, 2012; Smith, 2017). Based on Meşe and Aydın (2019) claims Instagram and Twitter are ultilized more for entertainment than Facebook for entertainment purposes. Based on Tayo et al. (2019) stated undergraduates used social media platforms primarily for academic purposes. Social networking is a computer-based technology that enables the exchange of ideas, feelings, and knowledge by creating the human population's virtual networks and communities around the world. Social networking is internet-based by nature and provides users with rapid electronic content communication to link to the world outside their sight. The number of social media users in Malaysia increased by 1.0 million (+ 4.1 percent) between April 2019 and January 2020, according to Digital Malaysia (2020), compared to 27.46 percent in 2018. It also reveals that, in January 2020, there were 26 million social media users in Malaysia. Social networking contains user-friendly apps that allow users to speak to each other and connect with each other. In addition to generating, editing, distributing and developing new types of textual, visual, audio material, social media can also do more than that. In almost all areas of people's lives, including education, engineering, entertainment, e-decision making, data searching, trading, and industry, social information and communication technologies are currently widely used.

Social networking sites such as Facebook, Instagram, Twitter and more offer people the opportunity to communicate through distances with each other. In other words, all due to social media, the whole world is at the hands of people. In particular, young people are among the most influential consumers of social media. People wonder, though, that anything so strong and with such a wide scope might not all be healthy. Like the way a coin often has two sides, the same goes for social media. Subsequently, on this debatable subject, various people have different opinions. So, we are going to see the pros and cons of social media in this study on social media.

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Usage of social media is common in adolescents and has increased prevalence, especially during pandemics, as movement is limited and exposure to the virus is reduced. The role of social media in shaping the views of the population and subsequent actions features of the social media audience's communicative activities in response to the outbreak news has drawn community attention rather than Facebook health promotion news. The proof of awareness is undeniable in the Facebook feed. For example, based on Abbas et al. (2019) rapid surge in social media usage is teenagers and college and university students are using social media applications to gain global access. Some experts have cautioned about the possible adverse impact on human health because of the overwhelming use of social media. In reality, a review performed by Ferguson et al. (2018) said that many parents, activists and policy makers have raised concerns about the possible negative effects of the use of social media in recent years. Some research has shown that the use of social media can be related to adverse mental health effects, including suicidality, loneliness, and reduced empathy. Outcomes taken into account included signs of general mental wellbeing, suicidal ideation, loneliness, social anxiety, and diminished empathy. The findings showed that the use of social media was not predictive of mental health disability. In this report, we will describe the relationship between the use of social media among undergraduate students of Universiti Putra Malaysia and depression, anxiety and stress .

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2.2 Depression

Depression is a serious mental health condition characterized by intense feelings of depression or a lack of interest lasting for at least a two-week period in day-to-day activities. Tiredness, changes in appetite, changes in sleep habits, decreased focus, feelings of worthlessness or hopelessness, and thoughts of self-harm or suicide may follow these emotions. According to Aalbers et al. (2018), depression is a dynamic complex of symptoms that include loss of pleasurable outcomes, irritability, stress, insomnia and fatigue (cited in Roberts ,2019). A research conducted by Shensa et al. (2019) claims that higher social media use level has been significantly linked to elevated depression. Depression is regarded as the most common health problem for college students (Depression and College Students, n.d.). There have been increases in adolescent depression and suicidal behaviour over the last two decades that coincide with the advent of social media (SM) which is a platform that allows communication via digital media), which is widely used among adolescents. A common major depressive disorder and extreme medical condition is known to have a detrimental effect on how people feel, how they think and how they behave. The good news here, however, is that it is indeed treatable through careful treatment by the physiatry and related medical team. In addition, the World Health Organization (WHO) clarified that depression contributes to feelings of misery and or a lack of interest in things once enjoyed by people. It can contribute to a number of physical and emotional issues and can reduce their ability to function at work and at home. Sleep and appetite can also be disrupted, leading to exhaustion and poor concentration. Depression is now recognized internationally as a leading cause affecting impairment and contributing enormously to the global burden of disease. Furthermore, depression can have long-lasting or chronic effects and can significantly affect the capacity of an individual to work and enjoy a rewarding life. Given the prevalence of social media, it is important to define the dynamics and course of this association to inform initiatives that tackle the use and depression of social media.

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2.3 Anxiety

Anxiety is described by the American Physiological Association (2020) as a tense of emotional feelings followed by worried thoughts that lead to repeated unwanted thoughts or worries. It is also characterized as a physical and psychological reaction to the care of a thought characterized by subjective, actively perceived feelings of tension that are significantly affected by circumstances and physiological satisfaction. Based on Jiang (2021) ,problematic social media usage especially during pandemic COVID-19 indirectly exert strain and pressure on university students' mental health. According to Aluh et al. (2019), social media anxiety was higher among females than males. Generalized anxiety disorder (GAD) is characterized in another study by persistent anxiety and concern that is difficult to manage and occurs most days over a span of six months or more. Somatic symptoms such as restlessness, exhaustion, difficulty focusing, irritability, muscle pain and sleep disturbances also follow it. In different areas of the brain involved these signs cause clinically relevant anxiety and disability . Anxiety is considered one of the major mental disorders today and said anxiety is faced by adolescents because fear of loss results in them attempting to reply and constantly update all the messages of their peers. By transmitting a signal to the chemoreceptor trigger zone (CTZ) through the medulla and cerebral cortex and limbic system, excessive social media use is believed to be a threat to health by inducing nausea and vomiting. The effect of social media on students has recently been recognized and researchers have been motivated to explore and find out how students are impacted by the use of social media in various ways. In a social media world, multiple studies have shown a correlation between anxiety and various patterns of behaviors of individuals.

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2.4 Stress

According to the World health organization (WHO), stress is defined as people's reaction when encountered with demands and pressures which are out of their knowledge and abilities and which challenge their ability to cope (cited in Work Related Stress, 2019).Stress is a sense of mental or physical tension, according to the Medical Encyclopedia. The internal and external demands put on their shoulders are part of the lives of university students. Based on Mofatteh (2021), university undergraduate students are at a higher risk of developing SAD in developed and developing countries. Any event or thinking that makes people feel upset, angry, or anxious may come from it. Stress is the response of the body to a threat or demand. Stress may be beneficial in quick bursts, such as when it helps to escape danger or reach a deadline. But it can affect the health of humans when stress persists for a long time. Adolescents are especially susceptible to academic stress-related issues when they are in transitions where individual and social levels of physiological and physical changes occur. In order to help students reduce stress, psychologists therefore help them. Stress is considered a significant influence on mood, our sense of well-being, behavior, and health. Acute stress responses can be adaptive in young, healthy people and usually do not place a health burden. However, the long-term effects of stressors can harm health if the danger is unremitting and ignored, particularly in older or unhealthy individuals. For the longest time, people thought that some kind of tension or issues is the least influenced by the student population. Nevertheless, stress is now recognised as a lifestyle crisis that affects every person regardless of their stage of growth (Banerjee & Chatterjee, 2016). In order to educate others about their mental states, request social help, as well as keep track of their everyday activities, desires, and interests, people are increasingly using social media sites. With regard to stress, social media posts have a significant effect on adolescents' daily life but these results can not be extended to enhance the psychological perception of stress, since people suffering from chronic stress do so regardless of stressful events.

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2.5 Global and local prevalence of depression, anxiety and stress

2.5.1 Prevalence of anxiety

According to the World Health Organisation(2017), the percentage of the world population with anxiety disorders in 2015 is estimated at 3.6%. However the prevalence of anxiety disorders has increased up to 3.8% (95% CI = 2.5%; 7%) in 2017. With a total number of 284 million people with anxiety disorder worldwide, they are more prevalent among females at 4.7% than males at 2.8% (Our World in Data, 2018). Nevertheless, in the end of 2019 upwards, the COVID-19 pandemic had given a significant impact on mental health issues around the world. A systematic review and meta-analysis done by Salari et al. (2020) showed that the prevalence of anxiety among general population in 17 studies with a sample size of 63,439 was 31.9% (95% CI: 27.5-36.7)

Based on Salari et. al (2020) also, the highest prevalence of anxiety is from Asia with the prevalence of 32.9 (95% CI: 28.2-37.9) compared to Europe with 23.8% (95% CI: 16.2-33.5). This may be due to different climates faced by the people in different region areas. Another research on surveying the prevalence of anxiety among medical students from seven different universities during the COVID-19 showed an estimated overall prevalence of 28% (95% CI: 22-34%) with a variety effects of sociodemographic factors (Lasheras I et. al., 2020).

According to a study carried out in Selangor, Malaysia, with the respondent number of 1556 out of 2512 participants being approached (61.9%), a prevalence of 8.2% of them are having anxiety. In addition, it is also stated that the predictors of anxiety in this case study were depression, serious problems at work, domestic violence and high perceived stress (Maideen et al. 2014).

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2.5.2 Prevalence of Depression

Depression is a common mental disorder which impacts over 264 million people across the globe. World Health Organisation (WHO, 2017). It is stated by Our World in Data (2018) that among 3.4% of people across the world experiencing depression, females also are dominant with a prevalence of 4.1% compared to males with a percentage of only 2.7%.

According to a study into different region areas, there was a gradual increase of depression cases worldwide from 1990 (172 million cases) to 2017 (25,8 million cases), with an increase of 49.86%. A country in Southern Africa, Lesotho reported the highest age-standardized incidence rate (ASR) of depression (6.59 per 1000). While the lowest ASR of depression is found to be in an Asia country, Myanmar (1.28 per 1000). In addition, both Indonesia and the Philippines recorded 1.79/1000 and 1.97/1000 each. The study also found that the proportions of the ASR of depression cases increased in regions with higher socio demographic index.

Based on another study carried by Nahas et al. (2019), the prevalence of depressive disorder among health science students at International Islamic University Malaysia was 36.4% with a response rate of 85.9% (n=365). The study revealed a significant association between gender as well as the students' origin and the severity of depression.

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2.5.3 Prevalence of Stress

Based on the Mental Health Foundation (2018), 74% of people in the United Kingdom (n=4619) have at certain point experienced being very stressed that they felt overwhelmed or unable to cope. Only less than forty percent of adults reported never feeling overwhelmed or unable to cope whereas the children that are unstressed only covers 3%. Over half of adults (51%) who felt stressed reported feeling depressed, and 61% reported feeling anxious. It is stated that some of the causes of them being stressed are due to their own, relatives or friends long term health conditions. Other sociodemographic factors such as financial problems, body appearance and being forced to succeed are also identified as one of the causes of stress.

According to a study carried out by YF and Y T (2018), the prevalence rate of perceived stress among undergraduate students in Universiti Putra Malaysia was 37.7%. A multivariate logistic regression model that was used in their study proved that female students and first year students are the one who perceive stress more than others.

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2.6 Global and local Prevalence of Usage of Social Media

Based on Dubras (2019), overall prevalence of social media in the UK market increased from 1% over the last year, moving from 66% of the total population of all ages in 2018 to 67% by January 2019. A cross sectional study on the prevalence and pattern of social media that was performed by Masoud et al. (2019) revealed that majority of the students in University of Fayoum, Egypt (94.2%) were at least using one type of social media and about one-third of the respondents (30.9%) spent almost 3-4 hours of their day using the social media. Moreover, 55.5% of the students visited three to five sites of social media a day. The study also suggested that social media usage can affect social health such as declining friendship level (30.2%), not having enough time to play sports (73.0%) and affecting studies in a negative way (62.4%).

Based on another study in a public university in Malaysia by Alshuaibi et al. (2015), it is observed that around 49.8% of business students in this university (N=225) are constantly using social media for days. In addition, nearly half of the students (43.1%) spent more than an hour when logging in to the sites of social media. As their study was also related to academic purposes, the findings showed that the mean values for social media use for academic purposes were between 5.87 and 4.16 with standard deviations ranging from 1.10 to 1.70. These findings prove the benefits of using social media in the learning environment. (Alshuaibi et al., 2015)

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2.7 Association between social media use and anxiety, depression and stress among Undergraduate Students

Social media usage is like a double sword usage to people, especially undergraduate students. Individuals use social media with varying quantity, emotional, and behavioral attachment that may have differential associations with mental health outcomes. Masoud et al. (2019) revealed that the majority of the students in University of Fayoum, Egypt (94.2%) were using at least one type of social media and about one-third of the respondents (30.9%) spent almost 3-4 hours of their day using social media.

According to Nguyen et al. (2020) claims that social networking addiction can be anticipated based on the low gray matter .The nucleus accumbens could estimate frequent usage (Montag et al., 2018). Furthermore, updating status and sharing images and videos predicts Facebook addiction actively, but wall activities such as "liking" volumes in the ventral (subgenual) anterior cingulate volume by Montag et al.(2018) or commenting are not related to Facebook addiction (Xie & Karan, 2019). Additionally, SNS addiction could coincide with food addiction and shopping addiction (Tang & Koh, 2017). SNS addicts are meeting the pressure to access the sites frequently due to the fear of missing out and keeping up with demands on relationship maintenance, constant social comparison with others, relationship turbulence with the public nature of conflict on the SNS, and frequent violation of privacy (Kuss et al., 2013; Fox & Moreland, 2015; Tang & Koh, 2017).

Based on Nyguen et al. (2020), they stated that another article also claims that Facebook use is linked with six results: addiction, anxiety, depression, body image, alcohol use, and other problems (cited in Frost & Rickwood, 2017). Problematic social media use among young Americans largely explains the connection between social media use and depressive symptoms (Shensa et al., 2020)

Finally, Facebook addiction can be predicted based on two characteristics, such as gender and anxiety (Xie & Karan, 2019). For more specific, among the low levels of trait anxiety, women had a higher level of Facebook addiction than men (Xie & Karan, 2019). A high level of character anxiety can lead to stress when users are disconnected from SNS (Xie & Karan, 2019).

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2.8 Sociodemographic factors

2.8.1 Age

Recently, it has been stated that social media interaction increases with age. A study published earlier this year (2020) by the University of Pittsburgh School of Medicine with support from the US National Institutes of Health found that the more time young adults spent on social media, the more likely they were to have problems sleeping and to experience symptoms of depression.According to Social Bakers social media trends (2020) describes that two most well known social networking sites include Facebook and Instagram that target millennial and Gen Z age groups as highest frequency social media users. Based on Ondeng (2017), students who were older encountered high levels of depression, anxiety, and stress. In other words ,age influences the degree of depression that students face. According to Olivas (2019), teenagers reveal frequent social media use between 13 to 17-year-olds in a study titled "Social Media, Social Life: Teens Reveal Their Experiences" done in September of 2018.face. Older students seemed to face more of the three emotional disorders. This is because they are facing more difficult topics and sitting more important tests.

SBSM average shows that 25-34 years old has the highest average profile followers about 24% followed by 35-44 years who possess approximately 13% and 18-24 years old has more than 10% usage .

Based on another research by Ospina, it is perplexing whether today's young people will continue using Snapchat as they become older. If they do, the age gradient would narrow. Social media is more prone regularly to be used by juveniles. In prosperous countries, there is a majority of adolescent users as the internet is ubiquitous (Ospina ,2019). Ospina (2019) also further claims that their statistics chart manifests people aged 16 to 24 use social networking sites. Social media will continue to flourish, if nowadays young adults continue using it throughout their life.

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2.8.2 Gender

Gender is also known as another critical determinant factor of mental health issues .In this case, many studies proved that females are more vulnerable to physiological changes. Based on Al-Dwaikiat et al. (2020), female students have significantly more worries than males students thus having significantly more stress than males students . According to the World Health Organization , gender is a determinant of differential power and controls men and women on their mental health and lives, their social position, status and treatment in society and thus is vulnerable to certain specific mental health risks.

When it comes to prevalent mental illness disorders such as depression, anxiety and stress as a result of too much focus on physical symptoms, gender differences are obvious. Again, women predominates, affecting about 1 in 3 people in the society and encompases a critical public health issue. Based on the World Health Organization's study further, they support that gender differences have been reported in age of beginning of symptoms, frequency of psychotic symptoms, course of these disorders, social adjustment and long run outcome. By 2020, it is predicted to be the second leading cause of global disability burden and is double more common in women.

Depression is not only the most common women's mental health problem but may be more persistent in women than men. Thus our research is to find out more about gender associate factors with social media usage.

WHO also stated the disability associated with mental illness falls most heavily on those who experience approximately four comorbid disorders. About four comorbid disorders reveal these women predominate the disability associated with mental illness falls. Therefore, depression, anxiety, somatic symptoms and high rates of comorbidity are significantly related to interrelated as well as intertwined risk factors such as gender based roles, cause of tension and pessimistic life experiences and events.

Gender bias occurs in the treatment of psychological disorders. Doctors are more likely to diagnose depression in women compared with men, even when they have similar scores on standardized measures of depression or present with identical symptoms. Female gender is a

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significant predictor of being prescribed mood altering psychotropic drugs. Gender differences are manifested in ways seeking psychological disorder. Women are more likely to seek help as well as reveal mental health problems to their primary health care physician while men are more likely to seek specialist mental health care and are the principal users of inpatient care. Majority females and male experience emotional strain and or psychological disorders are neither identified or treated by their doctor.

There is a pragmatic relationship between the frequency and severity of such social factors and the frequency and severity of mental health problems in women. Severe life events that cause a sense of loss, inferiority, humiliation or entrapment can predict depression. Anxiety and/or depressive disorders are by 20% of those patients who manifested anxiety and/or depressive disorders but their symptoms are not recognized and thus not treated.

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2.8.3 Family Income

Besides gender and age, family income is one of the essential components that determines the amount and frequency usage of social media. Based on Oyeboade (2017), it has been revealed socio-economic factors that lead to more undergraduates' use of social networking comprise : parental occupation, parental educational qualification as well as financial background Specific socio-economic factors, including parents' level of education, marital status, and family income also influence the usage of social media Based on Ahmed et al. (2020), students who have financial issues will struggle and lead to stress as well as depression.A study conducted by Sanil et al. (2018) reported that anxiety and depression were more prevalent in students from rural areas than urban areas because of the difference in the environment they need to cope compared to where they have been living in the past.

Economic and social policies instability brings abrupt changes to income, employment and social capital that are uncontrolled or unavoidable .This results in essentially elevated gender disproportion and frequency of common mental disorders who are using the Internet and social networking sites (SNSs). Besides, in other words, economic circumstances contribute to the major leading cause of depression compared to the aspect of educational level and social class.

According to another recent study by the majority of the study respondent's families that had better income will have less worries about academic achievements, more indulged in substances, and risky practices, this may ultimately contribute to the prevalence of depression in the study setting. Students from financially stable families have less tendency to suffer depression compared to those who are not. This is associated with families with unstable finances and are required to work harder to get as much salary to survive. Hence, this might affect the usage of social media by less affordable students. In this case, burnout syndromes including depression appeared to be affecting those poor families more than the rich. Other common problems arising from financial problems such as bank loans and studying fees will put the family under stress which eventually leads to depression.

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2.8.4 Year of Study

In addition, one of the factors that may be associated with the prevalence of depression, anxiety and stress is the year of study. Based on a research done by Islam et al. (2015), a random sample of 1023 undergraduate students of University of Malaya, Malaysia (response rate 90.4%) were collected. The results of this study shows a higher proportion of female students were depressed. Not only that, third year students recorded the highest percentage of experiencing depression (41.6%) followed by second year students (9.2%). Moreover, second year students are 2.52 times more likely to experience depression compared to the first year students. This shows that although first year students might have faced depression and other mental health issues regarding their studies, as they go to a higher level, their anxiety and worries will become greater as they need to think about their future uncertainties.

According to another study onto 75 medical students from Asia Metropolitan University (AMU), Johor Bahru, Malaysia (response rate = 90.7%), second year students again reported the highest percentage of experiencing psychological stress and depression (34.6%) followed by First year (30.7%), Third year (26.9%) and Fourth year students (7.5%). This is because second year medical students are sitting in their final professional examination in one month's time and this may increase the mental health states of the students (Marzo, 2016).

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2.8.5 Ethnicity

Ethnicity is another concern that results in anxiety, stress and depression sequelae among undergraduate students . Based on Ondeng (2017) variation in the degree of depression, anxiety, and stress are found among the three different ethnicities namely Asians, Africans, and Whites. Oncheng's study reveals white students such as Caucasian students are more while Arab students are the least depressed and anxious compared to the students from the other ethnicity.

According to another study in Universiti Sabah Malaysia, ethnic Chinese had a higher stress level as compared to other ethnicities. This was followed by the Malay ethnicity, Sabah native, Sarawak natives and Indians. Stress is a manifestation of psycho physiological reaction towards an excessive amount of workloads. This may be due to students being obligated to perform well in every study requiring them to excel in each examination. Hence, the students may endure stress from their academic performances, assignments, time constraints and even competing for getting good grades. In this case, Chinese students recorded the highest stress level and showed that they are striving hard to excel in their academic performances in the university (Bahari et al., 2012).

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2.9 Use of DASS in Undergraduate Students

Based on the Psychology Foundation of Australia (2018), Depression, Anxiety and Stress Scale-42 or DASS-42 is a tool measurement that encompases 42 items of depression, anxiety and stress self report scale design. It is widely used to define, understand and measure clinically the core symptoms and significance of emotional states. The DASS can be conducted for research purposes, either in groups or individually. Researchers dealing with the nature, etiology and mechanisms of emotional distress should benefit from the ability to distinguish between the three associated states of depression, anxiety and stress. Since the critical production of DASS with non-clinical samples has been carried out, it is suitable for the screening of normal adolescents and adults. There seems to be no convincing argument against the use of the scales for comparative purposes with children as young as 12 years, provided the requisite language proficiency. However, it should be borne in mind that the lower age limit for the development samples was 17 years.

DASS-42 categorizes depression ,anxiety and stress at 0 to 9 ,0-7 and 0-14 respectively .It also categorizes mild depression ,anxiety and stress at 10 to 13, 8 to 9 and 15 to 18 .

The Malaysia Journal of Physiatry Journal Reliability of DASS-42 (2012) revealed Cronbach alpha values of 0.94, 0.90 and 0.87 for depressive, anxiety and stress domains respectively. To compare with DASS-42, DASS-21 consists of 21 questions and the results gained must be multiplied by 2 in order to get the right scale.

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2.10 Conceptual Framework

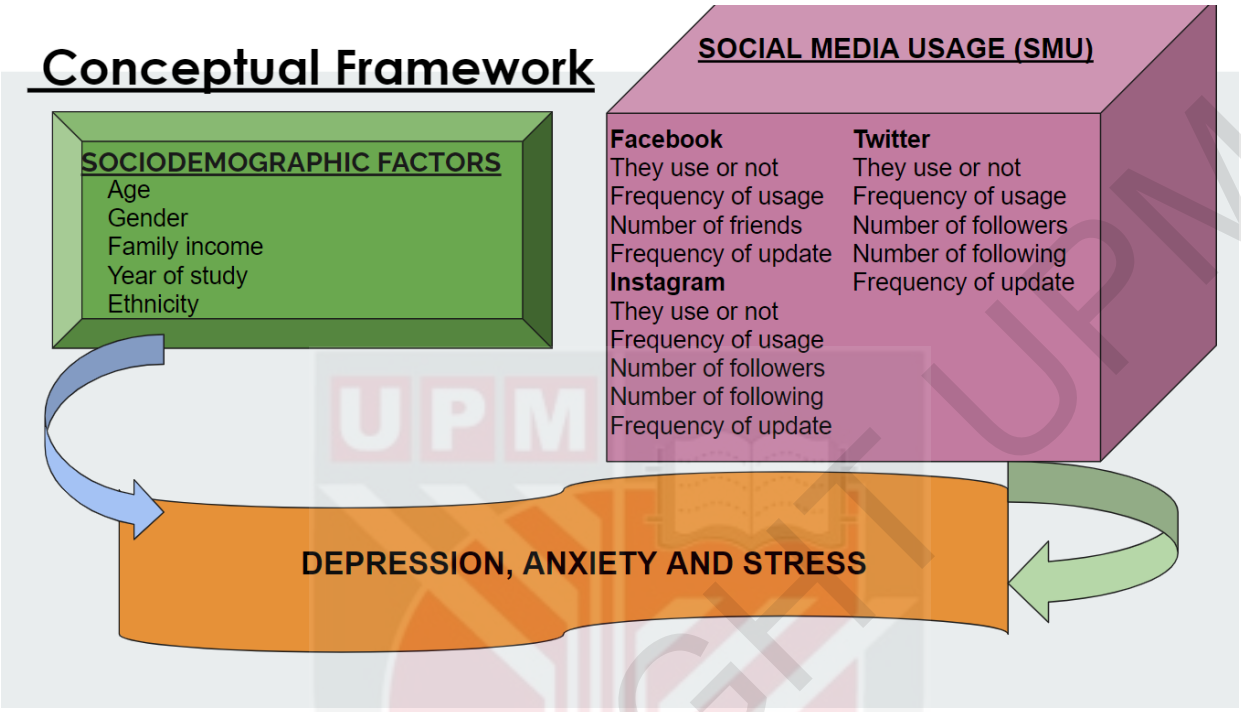

Figure 2.1 : Conceptual Framework

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CHAPTER 3 - METHODOLOGY

3.1 Study location

This study was carried out at Universiti Putra Malaysia (UPM), a public university whose main campus is located in Serdang, Selangor, Malaysia. This university consists of 13 faculties and a School of Business and Economics. Each of them have their own undergraduate and postgraduate students.

The name of faculties are listed as below:

1. Faculty of Agriculture
2. Faculty of Forestry and Environment
3. Faculty of Veterinary Medicine
4. Faculty of Computer Science and Information Technology
5. Faculty of Engineering
6. Faculty of Educational Studies
7. Faculty of Science
8. Faculty of Food Science and Technology
9. Faculty of Human Ecology
10. Faculty of Modern Language and Communication
11. Faculty of Design and Architecture
12. Faculty of Medicine and Health Science
13. Faculty of Biotechnology and Biomolecular Sciences
14. School of Business and Economics

3.2 Study Design

The study design used was a cross-sectional study by analyzing the questionnaire given. Cross sectional study is an observational study that collects data on a time rather than a period of time to get the prevalence rate of current issues.

3.3 Study Duration

The study was conducted from 20th December 2020 until 5th July 2021.

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3.4 Sampling

3.4.1 Study Population

The study population consisted of all Universiti Putra Malaysia (UPM) undergraduate students who are registered in the academic year 2020/2021. There are a total of more than 15,000 students enrolled in the undergraduate degree in 2020.

3.4.2 Sampling Population

3.4.2.1 Inclusion Criteria

All Year 1, Year 2, Year 3, Year 4, and Year 5 undergraduate students from all faculties in Universiti Putra Malaysia (UPM). This includes undergraduate students from executive programs too.

3.4.2.2 Exclusion Criteria

1. Students that are unwell
2. Students that are not reachable
3. Postgraduate students
4. Foundation students

3.4.3 Sampling Frame

The total number of undergraduate students of Universiti Putra Malaysia was obtained from each faculty representative.

3.4.4 Sampling Unit

The sampling unit consisted of an undergraduate student of UPM.

3.4.5 Sample Size Estimation

The estimated sample size is determined by calculating the **n** using the two proportion formula. The highest n was chosen as the sample size for this research.

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For depression,

n = (Zα/2+Zβ)^2 x (P1(1-P1)+P2(1-P2)) / (P1-P2)^2

n = (1.96+0.84)^2 x (0.1(1-0.1)+0.05(1-0.05)) / (0.1-0.05)^2

n = 431.51

n = 432

Where:

Zα/2 is the critical value of the normal distribution at α/2

e.g. for a confidence level of 95%, α is 0.05 and the critical value is **1.96**

Zβ is the critical value of the normal distribution at β

e.g. for a power of 80%, β is 0.2 and the critical value is **0.84**

P1 = **0.1** , sample proportion in Group 1

P2 = **0.05** , sample proportion in Group 2

For anxiety,

n = (Zα/2+Zβ)^2 x (P1(1-P1)+P2(1-P2)) / (P1-P2)^2

n = (1.96+0.84)^2 x (0.2(1-0.2)+0.4(1-0.4)) / (0.2-0.4)^2

n = 78.4

n = 78

Where:

Zα/2 is the critical value of the normal distribution at α/2

e.g. for a confidence level of 95%, α is 0.05 and the critical value is **1.96**

Zβ is the critical value of the normal distribution at β

e.g. for a power of 80%, β is 0.2 and the critical value is **0.84**

P1 = **0.2** , sample proportion in Group 1

P2 = **0.4** , sample proportion in Group 2

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For stress,

$n = (Z\alpha/2+Z\beta)^2 \times (P1(1-P1)+P2(1-P2)) / (P1-P2)^2$

$n = (1.96+0.84)^2 \times (0.2(1-0.2)+0.1(1-0.1)) / (0.2-0.1)^2$

$n = 196$

Where:

$Z\alpha/2$ is the critical value of the normal distribution at $\alpha/2$

e.g. for a confidence level of 95%, α is 0.05 and the critical value is **1.96**

$Z\beta$ is the critical value of the normal distribution at β

e.g. for a power of 80%, β is 0.2 and the critical value is **0.84**

P1 = **0.2** , sample proportion in Group 1

P2 = **0.1** , sample proportion in Group 2

The final sample size calculated that was chosen is n = 432 considering the expected response rate will be 60%.

Design effect for stratified sampling = 432 x 2

= 864

Considering there is a 40% unresponsive rate,

864 x 140% = 1210

There will be a total of **1210** sample populations of undergraduate students.

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3.4.6 Sampling Technique/ Method

This study used a random sampling method which was a stratified sampling technique. This technique involved obtaining a number of populations and dividing them into subgroups according to their faculty. These subgroups are also known as strata. As for that, a comparison between the strata was easily identified using this method.

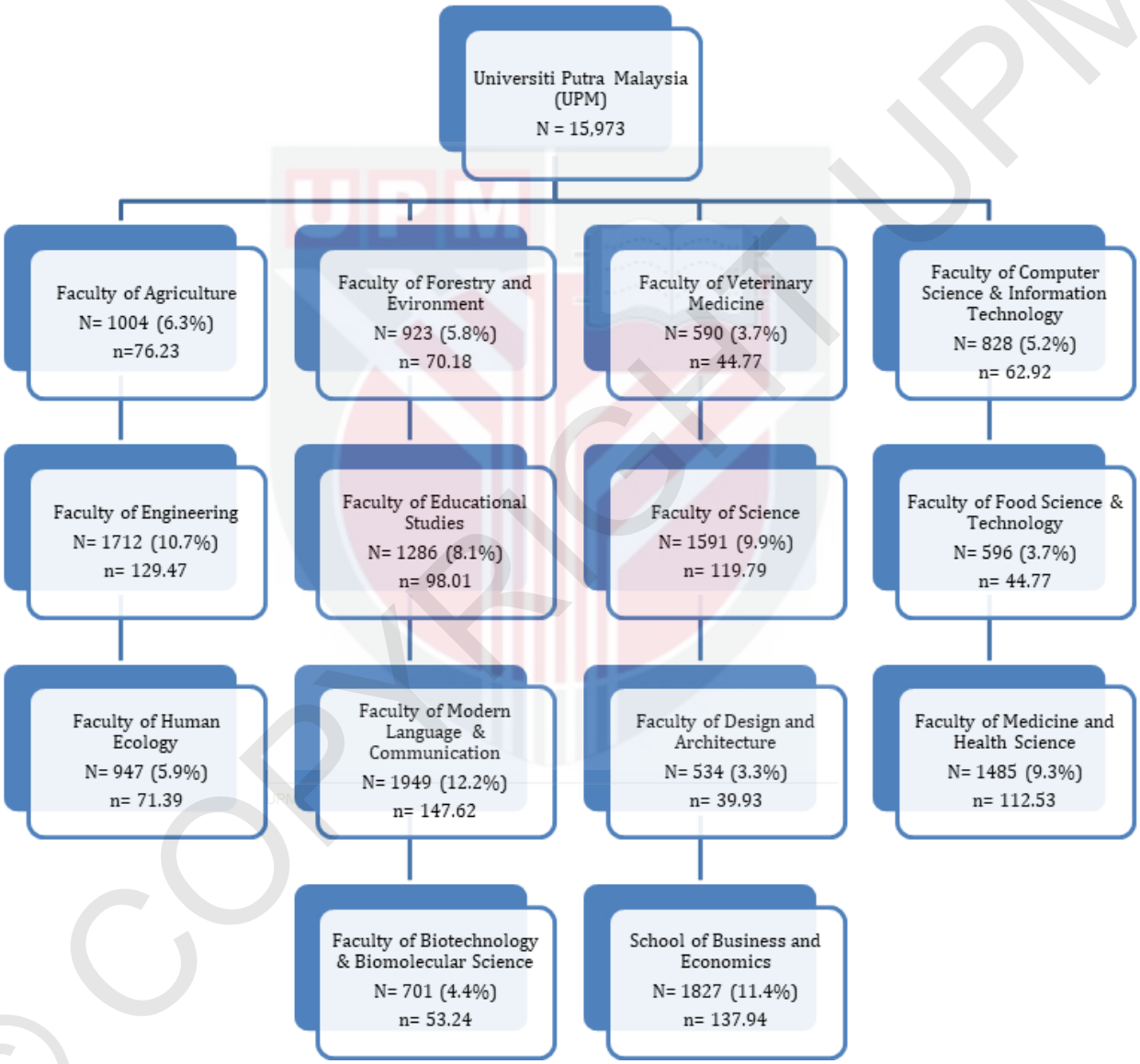

Figure 3.1: Stratified sampling technique (n=1208.79)

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3.5 Data Collection

3.5.1 Study Instruments

This study was conducted using an online questionnaire in the form of google form. The questionnaire was used as it is less time consuming, and was able to get data from a wider sample size. The first part of the questionnaire was the Depression, Anxiety and Stress Scale (DASS-42) that consisted of 42 items to get the current prevalence of depression, anxiety and stress. The DASS was specially designed to identify, recognize and assess the pervasive and clinically important emotional states such as depression, anxiety and stress in advance. Respondents are asked to rate their experience over the past week in each state with a 4-point severity/frequency scale. Then, scores for Depression, Anxiety and Stress were summed up to obtain the final result (Lovibond & Lovibond, 1995).

The DASS was created by Syd Lovibond and Peter Lovibond at the University of New South Wales in 1995. It was the complete version of DASS which consisted of 42 questions and is also known as DASS-42. Over time, another incomplete version of DASS was also designed for subjects that need instruments that are less time consuming, which is the DASS-21. The exact result from DASS-21 needs to be multiplied by 2 and the sum for corresponding 14 items in DASS per scale should be the score of the participants for each Depression, Anxiety and Stress. Since the scales of the DASS have been shown to be of high internal consistency and to produce meaningful discrimination in a variety of settings, the scales should satisfy the needs of both researchers and clinicians who wish to measure the current state or change the state over time.

Table 3.1: DASS-42 SCORE AND DEPRESSION, ANXIETY, STRESS SEVERITY

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33

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Extremely Severe	28+	20+	34+

Meanwhile the second part consisted of a structured questionnaire to obtain the prevalence of social media usage and its socio-demographic factors. A pre-testing questionnaire was done among 14 undergraduate students from each faculty. Respondents were asked about their opinions on the questions provided.

3.5.2 Data collection techniques

First, a formal letter was sent to the Bahagian Akademik Universiti Putra Malaysia (UPM) and each faculty dean in UPM to obtain the contact numbers of student leaders for the respective faculties. Then, the student leaders or representatives from each faculty were approached and given the link for the online questionnaire (Google Form) to be distributed to the students/ respondents via Whatsapp. The respondents were provided with an information sheet to let them know about the purpose of this research. A consent form was also given in the first page of the questionnaire to get their concern regarding our research. If the participants agree to respond to the questionnaire, they will enter a valid email address and click on the 'Yes' button to continue. Then, the respondents were required to answer all the questions provided and the data will be confidential. As it is a questionnaire responded by undergraduate students of Universiti Putra Malaysia, this was the primary data collection for our research.

3.5.3 Validity and Reliability

The instruments that were used during this research have been validated and was reliable. As for the prevalence of depression, anxiety and stress, the DASS-42 is used as a guideline. DASS or Depression, Anxiety, and Stress Scale is a tool measurement that includes a complete of 42 items or questions regarding depression, anxiety and stress. It was reported that DASS-42 can be used for individuals as young as 12 years of age (Lovibond and Lovibond, 1995). The questionnaire was also tested for their reliability using Cronbach's Alpha. It has been shown that DASS-42 is reliable and valid with a three-factor structure (Clara, Cox and Enns, 2001). This instrument has also been translated into other languages including Bahasa Melayu (Musa and Fadzil, 2007). Both

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English and non-English versions have strong internal consistency, with Cronbach's alpha score of > 0.7. The range of Cronbach's alpha coefficients is between 0 to 1, and as the higher the alpha gained, the more reliable the scale will be. So the Cronbach's alpha coefficients, with a cut off of 0.7 suggested a high internal reliability. DASS-42 reliability showed excellent Cronbach alpha values for depression, anxiety and stress domains of 0.94, 0.90 and 0.87, respectively (Musa, Ramli, 2012).

3.6 Data Analysis

The data was analysed using version 25.0 of the Statistical Package of Social Science (SPSS). Descriptive statistics analysed the sociodemographic variables where the prevalence and frequency were evaluated. Normality test was done on the numerical data for each social media, such as age and number of followers and how often they use the social media; Facebook, Instagram and Twitter. Using the Kolmogorov-Smirnov and Shapiro-Wilk test, the normality test of these variables was calculated. The numerical data was then translated into categorical data.

3.6.1 Descriptive statistics

Descriptive statistics evaluate the prevalence of depression, anxiety and stress and social media use as it is shown as frequency and percentage (%) for categorical variables. The data of the pattern of usage of social media among undergraduate students; Facebook, Instagram and Twitter was also analyzed. This includes how often do they spend time on their social media, how many followers do they have and how many people or accounts are they following, and how often do they update a post or comments on their social media. Meanwhile mean and standard deviation were used to describe the continuous variables. Normal distribution of the continuous variables was accessed using the Shapiro-Wilk test, Kolmogorov-Smirnov, and histogram.

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3.6.2 Analytical statistics

Analytical statistics was used to identify all the associations between variables. A hypothesis testing was used to determine statistically differences between the association of depression, anxiety and stress and the social media usage in undergraduate students of Universiti Putra Malaysia. The level of significance will be set at $\alpha = 0.05$. On the other hand, P value; which is the probability that the observed association has been obtained by chance or the null hypothesis is accepted, was also obtained from this statistical testing. If the P value is more than 0.05, it was decided to not reject the null hypothesis and there was not enough evidence to accept the alternative hypothesis. The significance level or α that we put was the maximum level of risk as the inference from the sample to the population.

3.7 Variables

3.7.1 Independent variable

The independent variables of this study were the demographic factors such as age, gender, family income and social media pattern of usage.

3.7.2 Dependant variable

The dependent variables of this study were the prevalence of depression, anxiety and stress among undergraduate students.

3.8 Study Ethics

An ethical clearance was obtained from the Ethics Committee for Research Involving Human subjects of Universiti Putra Malaysia (JKEUPM). In addition, prior to answering the questionnaires, voluntary consent was included in the instruments. A maximum benefit was provided in the questionnaire such as keeping the information anonymous, avoiding any mental abuse of the respondent. The data collected from the respondents is kept confidential among the researchers.

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3.9 Expected outcome

- Less than half of the respondents might experience depression, anxiety and stress.
- A high prevalence of social media usage among undergraduate students.
- Majority of the students experiencing depression, anxiety and stress associated with the usage of social media

3.10 Limitations of the study

This research was done only to undergraduate students of Universiti Putra Malaysia. Hence, the outcome of this research may not represent the prevalence of the entire undergraduate students' population in Malaysia. Therefore, inferences regarding the general population cannot be done.

Next, there might be limitations due to information bias and non-response bias. For information bias, the respondents might have received the questionnaire but they did not understand the questions very well or take it for granted. For instance, respondents might answer the questions according to their preferences and modify their answers on the percentage of using social media and presence of mental health issues to meet the current proper norms instead of expressing the actual data. However, for the non-response bias, the inclusive respondents that were supposed to answer the questionnaire did not receive the questions either due to poor internet connection or entering the wrong link. As a consequence, the information obtained might be misleading data.

3.11 Definition of Terms

3.11.1 Social Media Use

- The respondents were asked how much time per day they spent on their social media accounts; Facebook, Instagram and Twitter and how many followers and friends they have on social media; how often they update on Facebook, Instagram and Twitter.

3.11.2 Depression, Anxiety and Stress

- The response was based on the DASS-42 Questionnaire filled up by respondents.

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CHAPTER 4 - RESULTS

4.1 Response Rate

Our research initially targeted 1210 respondents from 1st year to 5th year of undergraduate students from all faculties in Universiti Putra Malaysia. After considering the unresponsive rate which is for 40%, the calculated sample size for our research was 864. We started distributing the questionnaire on the 7th of April. After a month of collecting data through Google Form, we reached the minimum requirement for the study where 879 students had responded. The remaining non-respondents were mostly from 4th and 5th year students as both of them are mostly final year students who were busy with their posting examinations and final year project. As calculated, the final response rate for the research study was 101%.

4.2 Descriptive Statistics

The questionnaires were given to all undergraduate students in Universiti Putra Malaysia (UPM) Serdang Campus. Table 4.1 shows the distribution of respondents according to socio-demographic factors of undergraduate students in UPM based on the data analysis. The socio-demographic characteristics of the respondents includes the age, gender, family income, year of study and ethnicity. The respondents were made up of 186 male (21.2%) and 693 (78.8%) females. The ethnic composition was 601 Malays (68.8%), 115 Chinese (13,1%), 115 Indians (13.1%), 21 Bumiputera Sabah Sarawak (2.4%) and 27 of the respondents were International students (27.31%). Regarding year of study, most of the respondents were Year 1, Year 1 at 395 with a percentage of 44.9%, Year 2 at 341 (38.8%) , Year 3 at 94 (10.7 %), Year 4 at 46 (5.2%) and Year 5 at 3 (0.3 %). It also revealed that the majority of the respondents were female (78.8%). The age of respondents (18-19 years old) are at 12 students (1.4 %), 20 years old at 315 (35.8 %), 21 years old at 344 (39.1 %), 22 year old at 106 (12.1%), 23 years old at 65 (7.4%), 24 years old at 29 (3.3%) and 25-29 years old at 8 respondents (0.9 %).

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The monthly household income of respondents composed of B20 at 377 (42.9 %), M20 (RM4360-RM9619) at 308 (35.0 %) and T20 (< RM9616) at 194 (22.1%). The faculty of study were made up of Faculty of Agriculture at 32 (3.6%), Faculty of Forestry and Environment at 29 (3.3%), Faculty of Veterinary Medicine at 26 (3.0 %), Faculty of Computer Science and Information Technology at 22 (2.5 %), Faculty of Engineering at 57 (6.5 %), Faculty of Educational Studies at 104 (11.8 %), Faculty of Science at 67 (7.6 %), Faculty of Food Science and Technology at 64 (7.3 %), Faculty of Human Ecology at 28 (3.2 %), Faculty of Modern Language and Communication at 26 (3.0 %), Faculty of Design and Architecture at 14 (1.6 %), Faculty of Medicine and Health Science at 284 (32.3 %), Faculty of Biotechnology and Biomolecular Science at 60 (6.8 %) and School of Business and Economics at 66 (7.5 %). 68.4% of the respondents were Malay. 44.9% of the first year contributed to the study, making them the largest group in comparison to the other year of study.

Table 4.1 : Distribution of Respondents Based on Socio-Demographic Factors among Undergraduate Students in UPM

Sociodemographic Factors		**Frequency (n=879)**	**Percent (%)**
Age	18-19	12	1.4
	20	315	35.8
	21	**344***	39.1
	22	106	12.1
	23	65	7.4
	24	29	3.3
	25-29	8	.9

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Gender	Female	**693***	78.8
	Male	186	21.2
Ethnicity	Malay	**601***	68.4
	Indian	115	13.1
	Chinese	115	13.1
	Bumiputera Sabah/ Sarawak	21	2.4
	International	27	3.1
Monthly Household Income	B40 (<RM4,360)	**377***	42.9
	M40 (>RM4,360 - RM9,619)	308	35.0
	T20 (>RM9,619)	194	22.1
Faculty of Study	Faculty of Agriculture	32	3.6
	Faculty of Forestry and Environment	29	3.3
	Faculty of Veterinary Medicine	26	3.0
	Faculty of Computer Science and Information Technology	22	2.5
	Faculty of Engineering	57	6.5
	Faculty of Educational Studies	104	11.8
	Faculty of Science	67	7.6

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	Faculty of Food Science and Technology	64	7.3
	Faculty of Human Ecology	28	3.2
	Faculty of Modern Language and Communication	26	3.0
	Faculty of Design and Architecture	14	1.6
	Faculty of Medicine and Health Science	**284***	32.3
	Faculty of Biotechnology and Biomolecular Science	60	6.8
	School of Business and Economics	66	7.5
Year of Study	Year 1	**395***	44.9
	Year 2	341	38.8
	Year 3	94	10.7
	Year 4	46	5.2
	Year 5	3	.3

***Mode of each variables**

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4.3 Normality Assessment

The numerical data that was collected throughout this study were the DAS score for stress, depression and anxiety. The normality assessment of these continuous variables were determined statistically using the Kolmogorov-Smirnov and Shapiro-Wilk test and graphically using histogram. For sample size less than 2000, variables that are normally distributed will have p-value of Shapiro-Wilk more than 0.05. As for the DAS score for stress, depression and anxiety, they are further tested using Kolmogorov-Smirnov and Shapiro-Wilk tests. Both tests for all variables showed a p-value less than 0.05. Thus, the distribution for these data variables are not normal. All histograms showed the data are positively skewed. It is also noted that the continuous data for the depression, anxiety and stress score is converted into categorical data. Table 4.1 shows the normality test results for DAS score for stress, depression and anxiety

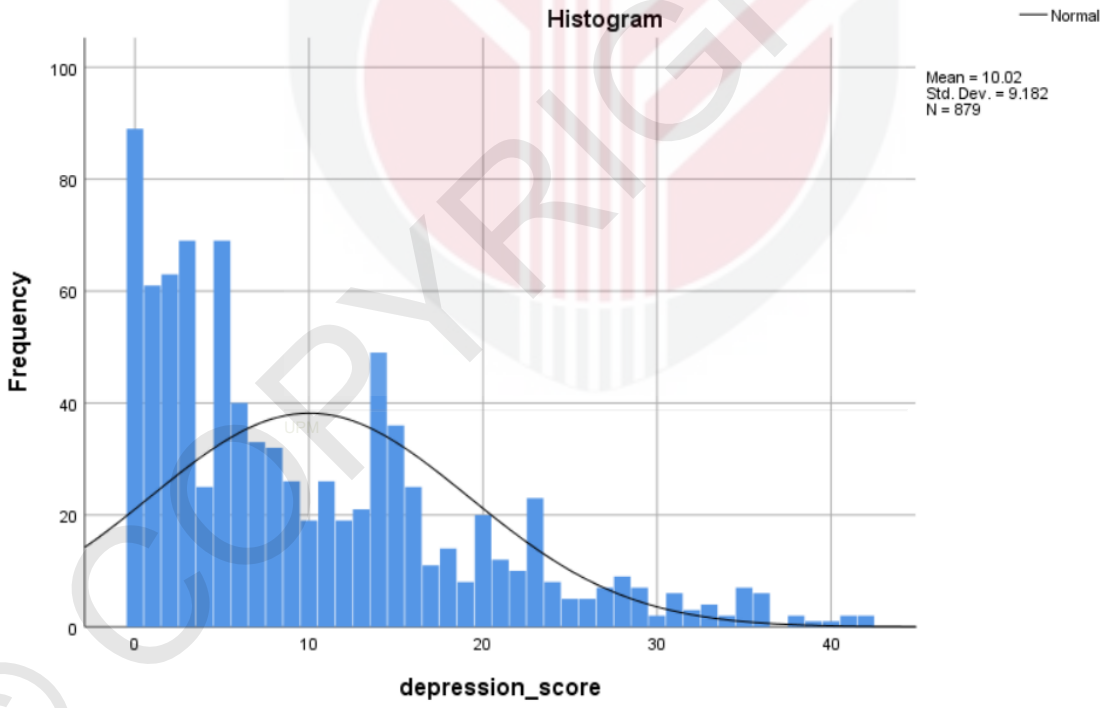

Figure 4.1 : Distribution of DAS score for depression

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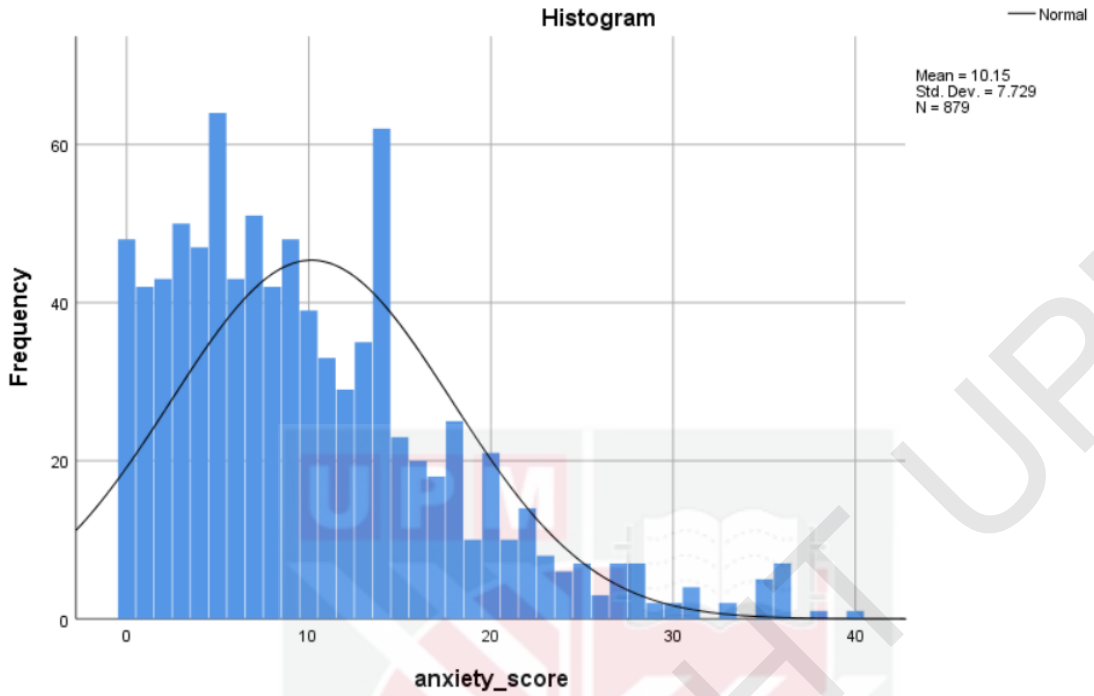

Figure 4.2 : Distribution of DAS score for anxiety

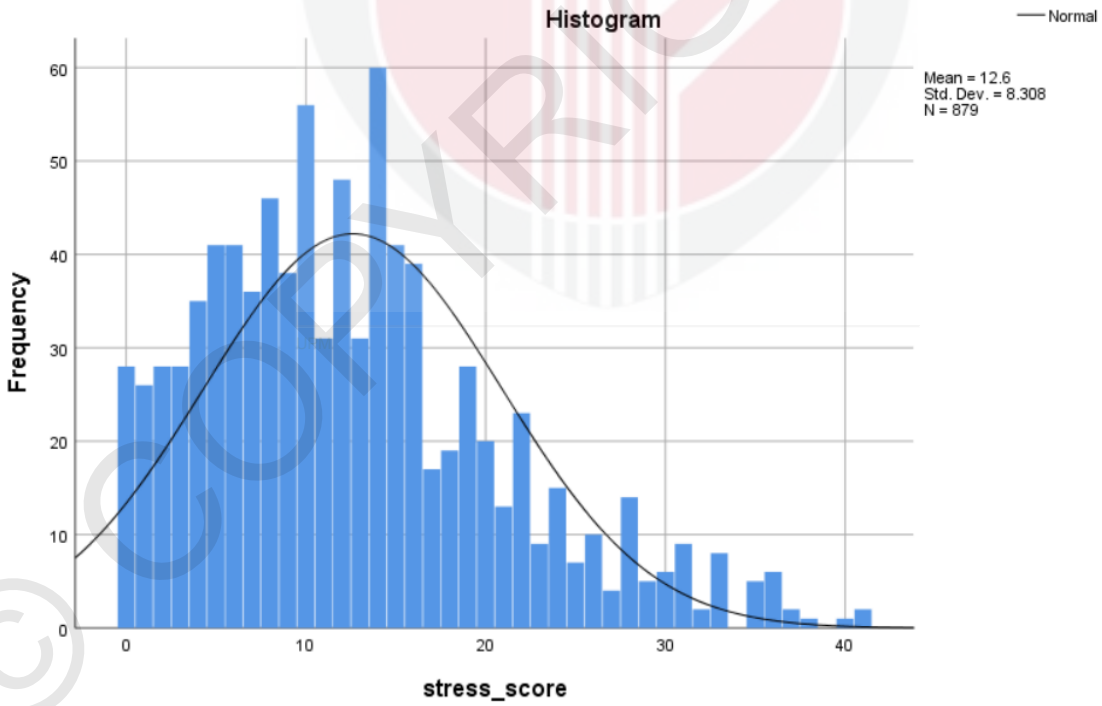

Figure 4.3 : DAS score for stress

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Table 4.2 Normality Test Result for DAS score

Variables	Kolmogorov-Smirnova		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Depression score	0.085	0.000	0.952	0.000
Anxiety score	0.103	0.000	0.924	0.000
Stress score	0.143	0.000	0.891	0.000

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4.4 Social Media Usage among Undergraduate Students in UPM

The recorded percentage of respondents with a Facebook account was 85.4%. Among them, most of them did not use Facebook for more than 30 minutes (59.4%). A majority of respondents had less than 99 friends on Facebook (19.6%) and do not use Facebook for any updates (56.8%).

On the other hand, 95.2% of respondents have an Instagram account. Among them, most of them used Instagram for 30 minutes to 1 hour on a daily basis (25.9%). A majority of respondents had more than 1000 followers on Instagram (16.6%) and between 300 to 399 followings (12.7%) . Majority respondents update once a month on their Instagram platform (29.0%).

Next for Twitter, 58.8% of respondents have an account. Among them, most of them do not use Twitter for more than 30 minutes on a daily basis (16.2%). A majority of respondents had less than 99 followers on Twitter (34.4%) and also less than 99 followings on Twitter (25.3%). Large numbers do not update on their Twitter platform (17.0%).

Table 4.3 Distribution of Respondents Based on their Social Media Usage among Undergraduate Students in UPM

Social media usage	Frequency (n=879)	Percentage (%)
Facebook		
Facebook Account		

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No	128	14.6
Yes	**751***	85.4
Daily usage of Facebook		
Less than 30 minutes	**522***	59.4
30 minutes to 1 hour	121	13.8
1 to 2 hours	62	7.1
2 to 3 hours	31	3.5
3 to 4 hours	9	1.0
4 to 6 hours	4	0.5
More than 6 hours	2	0.2
Number of friends on Facebook		
1-99	**172***	19.6
100-199	102	11.6
200-299	87	9.9

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300-399	54	6.1
400-499	39	4.4
500-599	56	6.4
600-699	27	3.1
700-799	33	3.8
800-899	24	2.7
900-999	16	1.8
1000 or more	141	16.0
Update frequency on Facebook		
More than once everyday	12	1.4
Once everyday	11	1.3
Few times a week	29	3.3
Once every week	10	1.1
Few times a month	60	6.8
Once a month	130	14.8

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Never update	**499***	56.8
Instagram		
Instagram Account		
No	42	4.8
Yes	**837***	95.2
Daily usage of Instagram		
Less than 30 minutes	177	20.1
30 minutes to 1 hour	**228***	25.9
1 to 2 hours	203	23.1
2 to 3 hours	106	12.1
3 to 4 hours	78	8.9
4 to 6 hours	35	4.0

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More than 6 hours	10	1.1
Number of followers on Instagram		
1-99	83	9.4
100-199	83	9.4
200-299	88	10.0
300-399	104	11.8
400-499	83	9.4
500-599	101	11.5
600-699	55	6.3
700-799	31	3.5
800-899	24	2.7
900-999	39	4.4
1000 or more	**146***	16.6
Number of following on Instagram		

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1-99	59	6.7
100-199	75	8.5
200-299	83	9.4
300-399	**112***	12.7
400-499	111	12.6
500-599	85	9.7
600-699	68	7.7
700-799	69	7.8
800-899	50	5.7
900-999	40	4.6
1000 or more	85	9.7
Update frequency on Instagram		
More than once everyday	50	5.7
Once everyday	34	3.9
Few times a week	119	13.5

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Once every week	43	4.9
Few times a month	170	19.3
Once a month	**255***	29.0
Never update	166	18.9

Twitter		
Twitter account		
No	362	41.2
Yes	**517***	58.8
Daily usage of Twitter		
Less than 30 minutes	**142***	16.2
30 minutes to 1 hour	94	10.7
1 to 2 hours	117	13.3
2 to 3 hours	81	9.2

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3 to 4 hours	45	5.1
4 to 6 hours	25	2.8
More than 6 hours	13	1.5
Number of followers on Twitter		
1-99	**302***	34.4
100-199	83	9.4
200-299	55	6.3
300-399	26	3.0
400-499	20	2.3
More than 500	31	3.5
Number of following on Twitter		
1-99	**222***	25.3
100-199	154	17.5
200-299	69	7.8

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300-399	39	4.4
400-499	18	2.0
More than 500	15	1.7
Update frequency on Twitter		
More than once everyday	77	8.8
Once everyday	34	3.9
Few times a week	94	10.7
Once every week	20	2.3
Few times a month	74	8.4
Once a month	69	7.8
Never update	**149***	17.0

***Mode of each variables**

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4.5 Prevalence of Mental Health Problems among Undergraduate Students in UPM

By conducting this research study, we can determine the prevalence of mental health problems that occur among undergraduate students in UPM. The mental health problems mentioned include depression, anxiety and stress disorders.

4.5.1 Prevalence of Depression

		Frequency	Percent%	Valid percent%	Cumulative percent%
Valid	**Normal**	507	57.7	57.7	57.7
	Depressed	372	42.3	42.3	100.0
	Total	879	100.0	100.0	

Table 4.5.1 (a): Prevalence of Depression Among UPM Undergraduate Students

The table 4.5.1 (a) shows the prevalence of depression among undergraduate students in UPM. Out of 879 respondents who participated, it was found that 372 of UPM undergraduate students are facing depression. It accounts for less than half of the respondents which is 42.3%. While more than half which accounts for 507 undergraduate students (57.7%) are normal and mentally healthy.

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		Frequency	Percent %	Valid Percent %
Valid	**Normal**	507	57.7	57.7
	Mild	85	9.7	9.7
	Moderate	163	18.5	18.5
	Severe	70	8.0	8.0
	Extremely severe	54	6.1	6.1
	Total	879	100.0	100.0

Table 4.5.1 (b): Prevalence of Depression Among UPM Undergraduate Students

The prevalence of depression is further divided into 5 levels based on the Depression Anxiety Stress Scale (DASS). Based on the Table 4.5.1 (b) above, more than half of the respondents were normal with no depression with frequency and percentage of 507 and 57.7% respectively. The second highest value was moderate depression with frequency of 163 respondents (18.5%). The least was extremely severe with a frequency of 54 and percentage 6.1% of undergraduate students of UPM.

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4.5.2 Prevalence of Anxiety

		Frequency	Percent%	Valid percent%	Cumulative percent%
Valid	**Normal**	388	44.1	44.1	44.1
	Anxious	491	55.9	55.9	100.0
	Total	879	100.0	100.0	

Table 4.5.2 (a): Prevalence of Anxiety Among UPM Undergraduate Students

The table 4.5.2(a) above shows the prevalence of anxiety among undergraduate students in UPM. It was determined that 491 University Putra Malaysia undergraduate students from those 879 respondents who participated have anxiety. It contributed to 55.9 % which is more than half of the respondents. While the rest of them, which are 388 undergraduate students, are normal and mentally healthy (44.1%).

		Frequency	Percent %	Valid Percent %
Valid	**Normal**	388	44.1	44.1
	Mild	90	10.2	10.2
	Moderate	198	22.5	22.5
	Severe	96	10.9	10.9
	Extremely severe	107	12.2	12.2
	Total	879	100.0	100.0

Table 4.5.2 (b): Prevalence of Anxiety Among UPM Undergraduate Students

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Based on the table 4.5.2(b), 388 respondents were normal with frequency and percentage of 388 and 44.1% respectively. One hundred and ninety-eight respondents were found to have moderate anxiety levels with a percentage of 22.5%. The least was mild with 90 respondents reported to have mild anxiety (10.2%).

4.5.3 Prevalence of Stress

		Frequency	Percent%	Valid percent%	Cumulative percent%
Valid	**Normal**	573	65.2	65.2	65.2
	Stressed	306	34.8	34.8	100.0
	Total	879	100.0	100.0	

Table 4.5.3 (a): Prevalence of Stress Among UPM Undergraduate Students

The table 4.5.3 (a) above shows the prevalence of stress among medical students in University Putra Malaysia. 306 out of all 879 undergraduate students in University Putra Malaysia who participated have stress. It accounts for 38.4% over 100%. While the rest of them, more than half which are 573 undergraduate students, are normal and mentally healthy (65.2).

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		Frequency	Percent %	Valid Percent %
Valid	**Normal**	573	65.2	65.2
	Mild	116	13.2	13.2
	Moderate	115	13.1	13.1
	Severe	58	6.6	6.6
	Extremely severe	17	1.9	1.9
	Total	879	100.0	100.0

Table 4.5.3 (b): Prevalence of Stress Among UPM Undergraduate Students

Based on the table 4.5.3(b) above, 573 out of 879 respondents were found normal with frequency and percentage of 573 and 65.2 % respectively. Second highest was mild with 116 respondents and percentage 13.2%. The least was extremely severe with 17 respondents reported to have severe stress (1.9%).

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4.6 Association between Sociodemographic Factors and Mental Health among Undergraduate Students in UPM

4.6.1 Age

The majority age among the respondents are ranging from 21 to 24 years old as they are from first year to fifth year undergraduate degree programmes. Depression level is found to be highest at the age of 20 years old, with the frequency of f =136 and at a percentage of 15.5%. As for anxiety, it is also highest amongst the age of 20 years old, with the frequency of 196 (22.3%). Stress level is highest amongst respondents aged 20 years old as well at 13.0% and frequency of 114. From the result of the Chi-Square test, there is no association between age and mental health as the p-value is more than 0.05 for depression, anxiety and stress level.

4.6.2 Gender

Depression level was found to be highest among females with a frequency of 307 and percentage of 34.9%. Meanwhile, anxiety and stress levels are also highest in females at a frequency of 404 and 262 respectively. The Chi-Square test was used to determine the association between gender and level of depression, anxiety and stress. The p-value is shown to be less than 0.05 hence indicating that there is association and significant difference between gender and mental health problems among these medical students. The odds ratio results show that females have 0.675 times more risk of being depressed, 0.629 times more risk of being anxious and 0.510 times more risk of being stressed than males. All these values clearly indicate that the female undergraduate students are more likely to have depression, anxiety and stress when being compared with the male undergraduate students.

4.6.3 Monthly Household Income

Household income is also one of the aspects taken into consideration in our research. We classified the household income based on the range of the parent's incomes combined per month. We refer to the standard classification of household income which consists of B40

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(RM4360-RM9169) and T20 (>RM9169). The level of depression is highest among M40 groups with a frequency of 169 and percentage of 44.8%. Chi-square tests were conducted to determine the association between household income and depression, anxiety and stress. For depression, the Chi-Square tests showed the p-value is more than 0.05. Therefore, there is no association between household income and depression among UPM undergraduate students.

Next is for anxiety. For anxiety, with frequency of 224 and percentage of 59.4%, the level of anxiety is seen highest again among B40 groups, meanwhile the lowest among M40 groups with a frequency of 159 and percentage of 51.6%. Chi-square tests showed the p-value is more than 0.05. To conclude, there is no association between household income and anxiety among UPM undergraduate students.

Lastly for stress, the level of stress is seen highest among the T20 group which accounts for 77 out of 194 and 39.5% for frequency and percentage respectively. On the other hand, the level of stress is seen lowest among M40 groups with a percentage of 31.2% and frequency of 96. The Chi-square tests revealed that the p-value is more than 0.05. So, there is no association between household income and stress among UPM undergraduate students since the p-value is more than 0.05.

4.6.4 Ethnicity

The ethnicity of the respondents were classified as Malay, Chinese, Indians, Bumiputera Sabah or Sarawak and international students. Depression level is the highest among International students at 17 out of 27, 63.0%, followed by Bumiputera Sabah and Sarawak respondents at a frequency of 11 out of 21 and percentage of 52.4%. As for anxiety levels, it is also highest among International students at 18 out of 27 with a percentage of 66.7% followed by Malay respondents at frequency of 346 out of 601 with a percentage of 57.6%. Moving on, for stress as well, it is the highest among International students at 14 out of 27, 51.9%, followed by Malay respondents again at a frequency of 216 out of 601 and percentage of 35.9%. From the result of the Chi-Square test, there is no association between ethnicity and mental health as the p-value is more than 0.05 for all three; depression, anxiety and stress level.

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4.6.5 Year of Study

A total 879 respondents in our research are basically from 1st year, 2nd year, 3rd year, 4th year and 5th year undergraduate students in UPM . We received the highest response from 1st year meanwhile the lowest from the 5th since they are having their final examinations. Stress accounted for 19 out of 46 for year 4 undergraduate students in UPM. Stress among is highest at 41.3 % and p value more than 0.05 ,so there is no association between year of study and depression among UPM medical students. Mild to severely severe anxiety is at 239 out of 395 (60.5 %) among year 1 is highest among undergraduate students in UPM and p value showed is more than 0.05, so there is no association between year of study and anxiety among UPM undergraduate students.

Meanwhile, the depression level was to be the least among year 5 undergraduate students with a percentage of 0.0%. Chi-square tests were conducted to determine the relationship between years of study and depression, anxiety and stress. The results for depression showed that the p-value is more than 0.05 indicating that there is no association between year of study and depression among UPM medical students. To conclude ,there is no association between year of study and anxiety ,depression and stress among UPM undergraduate students

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4.6.6 Faculty of Study

Stress level was found to be the highest among students in Faculty of Design and Architecture which is 9 out of 14 (64.3) among undergraduate students and p value for Chi Square is less than 0.05 ,so there is association between year of study and stress among UPM undergraduate students.

Depression level was found to be highest among Faculty Design and Architecture with a frequency of 10 out of 14 and percentage of 71.4%. P value for Chi square for depression shows less than 0.05 so there is association between depression and mental health problems among these undergraduate students.

Meanwhile, anxiety in Faculty Veterinary Medicine is 76.9 which is highest among the faculty for undergraduate students in UPM . Chi square result for anxiety revealed p value is less than 0.05 so there is association between faculty of study with mental health undergraduate students in UPM. The Chi-Square test was used to determine the association between gender and level of depression, anxiety and stress. To conclude , the p-value is shown to be less than 0.05 hence indicating that there is an association between faculty of study and mental health problems which are stress , depression and anxiety among these undergraduate students.

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Table 4.6: Association between Sociodemographic Factors and Mental Health among Medical Students of UPM

Variables	Depression			Anxiety			Stress		
	Normal f (%)	Depressed f (%)	P-value	Normal f (%)	Anxious f (%)	P-value	Normal f (%)	Stressed f (%)	P-value
Age (Years Old)									
18-19	3 (25.0)	9 (75.0)		4 (33.3)	8 (66.7)		7 (58.3)	5 (41.7)	
20	179 (56.8)	136 (43.2)		119 (37.8)	196 (62.2)		201 (63.8)	114 (36.2)	
21	213 (61.9)	131 (38.1)		168 (48.8)	176 (51.2)		231 (67.2)	113 (32.8)	
22	58 (54.7)	48 (45.3)	0.018	47 (44.3)	59 (55.7)	0.073	73 (68.9)	33 (31.1)	0.491
23	40 (61.5)	25 (38.5)		35 (53.8)	30 (46.2)		42 (64.6)	23 (35.4)	
24	10 (34.5)	19 (65.5)		12 (41.4)	17 (58.6)		14 (48.3)	15 (51.7)	
25-29	4 (50.0)	4 (50.0)		3 (37.5)	5 (62.5)		5 (62.5)	3 (37.5)	

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Gender									
Male	**121 (65.1)**	**65 (34.96)**		**99 (53.2)**	**87 (46.8)**		**142 (76.3)**	**44 (23.7)**	
Female	**386 (55.7)**	**307 (44.3)**	**0.022**	**289 (41.7)**	**404 (58.3)**	**0.001**	**431 (62.2)**	**262 (37.8)**	**0.005**
Monthly Household Income									
b40	**208 (55.2)**	**169 (44.8)**		**153 (40.6)**	**224 (59.4)**		**244 (64.7)**	**133 (35.3)**	
m40	**189 (61.4)**	**119 (38.6)**	**0.252**	**149 (48.4)**	**159 (51.6)**	**0.124**	**212 (38.8)**	**96 (31.2)**	**0.144**
t20	**110 (56.7)**	**84 (43.3)**		**86 (44.3)**	**108 (55.7)**		**117 (60.3)**	**77 (39.7)**	
Ethnicity									
Malay	**357 (59.4)**	**244 (40.6)**		**255 (42.4)**	**346 (57.6)**		**385 (64.1)**	**216 (35.9)**	
Indian	**67 (58.3)**	**48 (41.7)**		**53 (46.1)**	**62 (53.9)**		**82 (71.3)**	**33 (28.7)**	
Chinese	**63 (54.8)**	**52 (45.2)**	**0.151**	**58 (50.4)**	**57 (49.6)**	**0.152**	**79 (68.7)**	**36 (31.3)**	**0.176**

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Bumiputera	**10 (47.6)**	**11 (52.4)**		**13 (61.9)**	**8 (38.1)**		**14 (66.7)**	**7 (33.3)**	
International	**10 (37.0)**	**17 (63.0)**		**9 (33.3)**	**18 (66.7)**		**13 (48.1)**	**14 (51.9)**	
Year Of Study									
Year 1	**233 (59.0)**	**162 (41.0)**		**156 (39.5)**	**239 (60.**		**257 (65.1)**	**138 (34.9)**	
Year 2	**201 (58.9)**	**140 (41.1)**		**168 (49.3)**	**173 (50.7)**		**226 (66.3)**	**115 (33.7)**	
Year 3	**48 (51.1)**	**46 (48.9)**	**0.005**	**40 (42.6)**	**54 (57.4)**	**0.089**	**60 (63.8)**	**34 (36.2)**	**0.607**
Year 4	**22 (47.8)**	**24 (52.2)**		**22 (47.8)**	**24 (52.2)**		**27 (58.7)**	**19 (41.3)**	
Year 5	**3 (100.0)**	**0 (0.0)**		**2 (66.7)**	**1 (33.3**		**3 (100. 0)**	**0 (0.0)**	
Faculty Of Study									
Faculty Of Agriculture	**19 (59.4)**	**13 (40.6)**		**16 (50.0)**	**16 (50.0)**		**23 (71.9)**	**9 (28.1)**	

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Faculty Of Forestry And Environment	**13 (44.8)**	**16 (55.2)**		**8(27.6)**	**21 (72.4)**		**20 (69.0)**	**9 (31.0)**	
Faculty Of Veterinary Medicine	**9 (34.6)**	**17 (65.4)**		**6 (23.1)**	**20 (76.9)**		**12 (46.2)**	**14 (53.8)**	
Faculty Of Computer Science And Information Technology	**8 (36.4)**	**14 (63.6)**		**7 (31.8)**	**15 (68.2)**		**11 (50.0)**	**11 (50.0)**	
Faculty Of Engineering	**43 (75.4)**	**14 (24.6)**		**32 (56.1)**	**25 (43.9)**		**41 (71.9)**	**16 (28.1)**	
Faculty Of Educational Studies	**72 (69.2)**	**32 (30.8)**	**0.001**	**51 (49.0)**	**53 (51.0)**	**0.001**	**68 (65.4)**	**36 (34.6)**	**0.001**
Faculty Of Science	**23 (34.3)**	**44 (65.7)**		**25 (37.3)**	**42 (62.7)**		**34 (50.7)**	**33 (49.3)**	
Faculty Of Food Science And Technology	**38 (59.4)**	**26 (40.6)**		**24 (37.5)**	**40 (62.5)**		**39 (60.9)**	**25 (39.1)**	
Faculty Of Human Ecology	**19 (67.9)**	**9 (32.1)**		**17 (60.7)**	**11 (39.3)**		**20 (71.4)**	**8 (28.6)**	

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Faculty Of Modern Language And Communication	**11 (42.3)**	**15 (57.7)**		**8 (30.8)**	**18 (69.2)**		**12 (46.2)**	**14 (53.8)**	
Faculty Of Design And Architecture	**4 (28.6)**	**10 (71.4)**		**3 (21.4)**	**11 (78.6)**		**5 (35.7)**	**9 (64.3)**	
Faculty Of Medicine And Health Science	**187 (65.8)**	**97 (34.2)**		**148 (52.1)**	**136 (47.9)**		**210 (73.9)**	**74 (26.1)**	
Faculty Of Biotechnology And Biomolecular Science	**26 (43.3)**	**34 (56.7)**		**14 (23.3)**	**46 (76.7)**		**32 (53.3)**	**28 (46.7)**	
School Of Business And Economics	**35 (53.0)**	**31 (47.0)**		**29 (43.9)**	**37 (56.1)**		**46 (69.7)**	**20 (30.3)**	

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4.7 Association between Social Media Use and Mental Health among Undergraduate Students in UPM

The association between social media use and mental health among undergraduate students of UPM is done using two non-parametric tests; Mann-Whitney Test for variables that are binary and Spearman's Correlation for the other remaining variables that are not binary.

4.7.1 Facebook

Table 4.7.1 (a) shows the result of the Mann-Whitney test to determine the association of Facebook use and mental health among undergraduate students of UPM. From the test, the p-value is 0.169 ($p>0.05$), hence there is no significant difference between having a Facebook account and mental health issues which is depression among these undergraduate students. For anxiety disorder, the p-value is 0.255 which is also $p>0.05$. Hence, there is no association between having a Facebook account and anxiety among the students. Lastly, the p-value for stress score is 0.198 ($p>0.05$). Thus, there is also no significant difference between having a Facebook account and stress among the students. Shortly, there are no significant association between having a Facebook account and mental health issues among UPM undergraduate students.

	Depression score	Anxiety Score	Stress Score
Median scores	7.00	9.00	12.00
Interquartile range	12	10	11
Mann-Whitney U	44417.500	45043.500	44651.500
Z	-1.376	-1.139	-1.286
Asymp. Sig. (2-tailed)	.169	.255	.198

Table 4.7.1 (a): Association between having a Facebook account and Mental Health

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The figures below show the pattern of relationships of having a Facebook account and mental health which are depression, anxiety and stress score respectively among UPM undergraduate students.

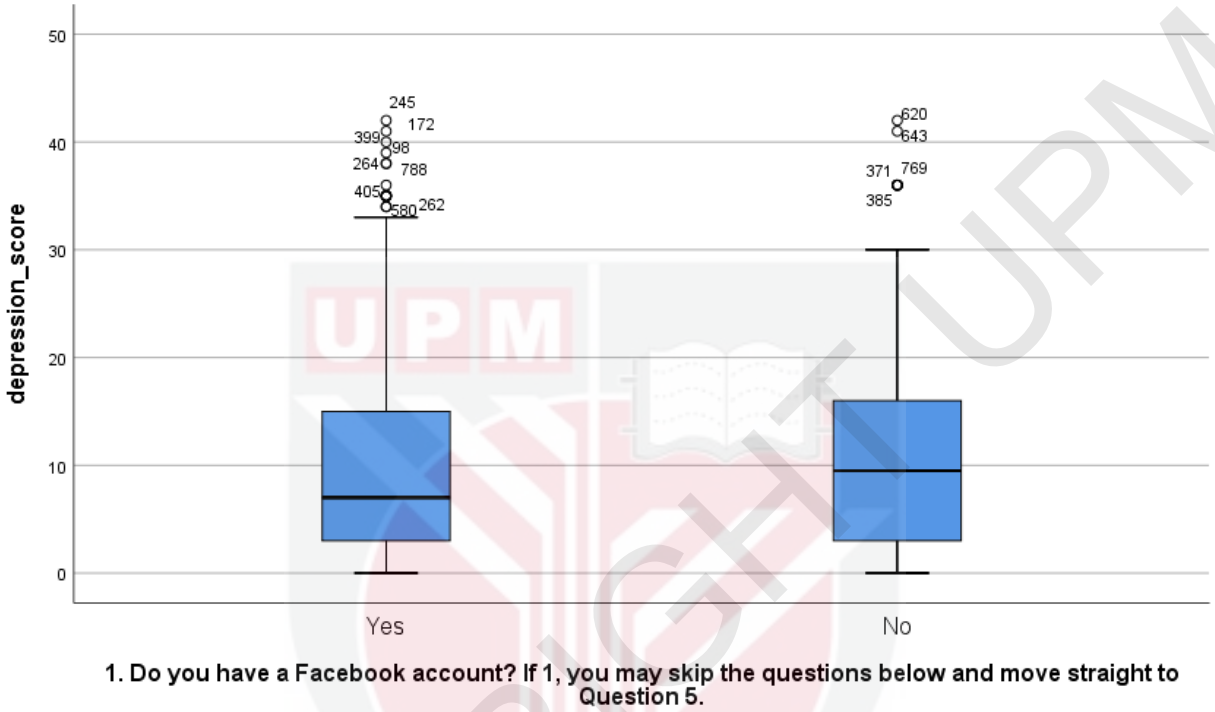

Figure 4.7.1 (a) : Pattern of relationship between having a Facebook account and Depression

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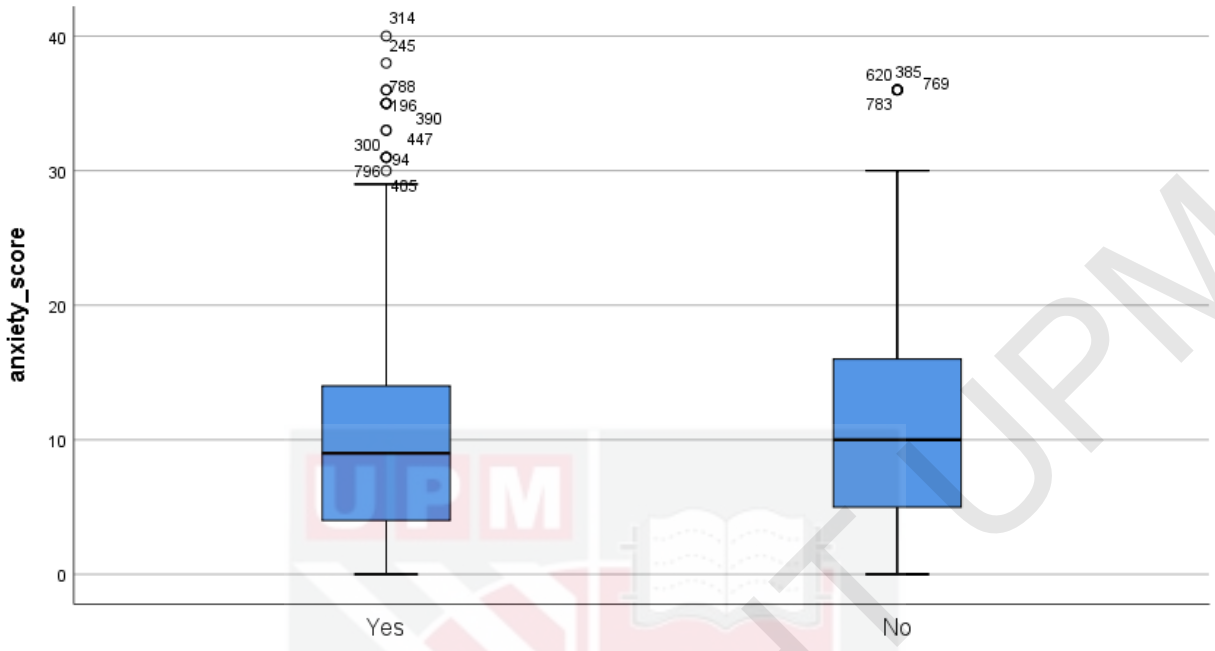

Figure 4.7.1 (b) : Pattern of relationship between having a Facebook account and Anxiety

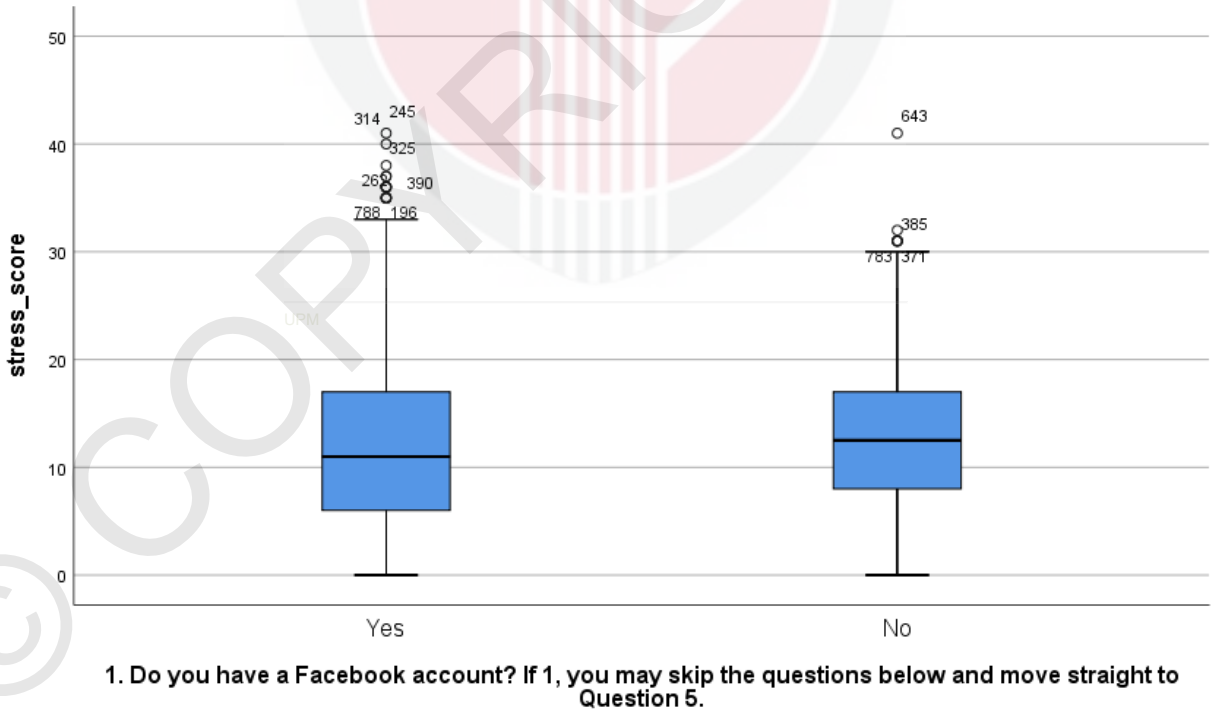

Figure 4.7.1 (c) : Pattern of relationship between having a Facebook account and Stress

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Since the data are not normally distributed, Spearman's Correlation is done to determine the correlation between the social media usage and mental health problems among UPM undergraduate students. The correlation analysis is used to show how strong the variables are related.

There is a negative, weak relationship between daily usage of Facebook and depression. Furthermore, it was not statistically significant (r = -0.052, p = 0.153). Hence, there is no association between daily usage of Facebook and depression among the undergraduate students. For the number of friends on Facebook and depression, the relationship is also negative and weak. However, there is a statistical significance between these variables (r = -0.177, p = 0.000). Thus, the null hypothesis is not rejected although they are weakly correlated. There is also a negative correlation between number of friends and anxiety and stress levels and are statistically significant (r = -0.107, p= 0.003), (r = -0.083, p=0.023) respectively. This explains that a lower number of friends on Facebook is associated with higher depression, anxiety and stress level. Another variable that we would like to check for their relationship is between the time spent to update on Facebook and the mental health level. There was a weak positive relationship between updating Facebook and depression but not statistically significant (r = 0.046, p = 0.207). However, there was a very weak negative relationship between time spent to update on Facebook and stress level and was not statistically significant (r = -0.019, p= 0.599).

			Depression score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.052	-0.177	0.046
		Sig. (2-tailed)	.	0.153	0.000	0.207
		N	879	751	751	751

Table 4.7.1 (b): Association between Facebook usage and Depression

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The figures below show the pattern of relationships of Facebook usage and depression score among UPM undergraduate students.

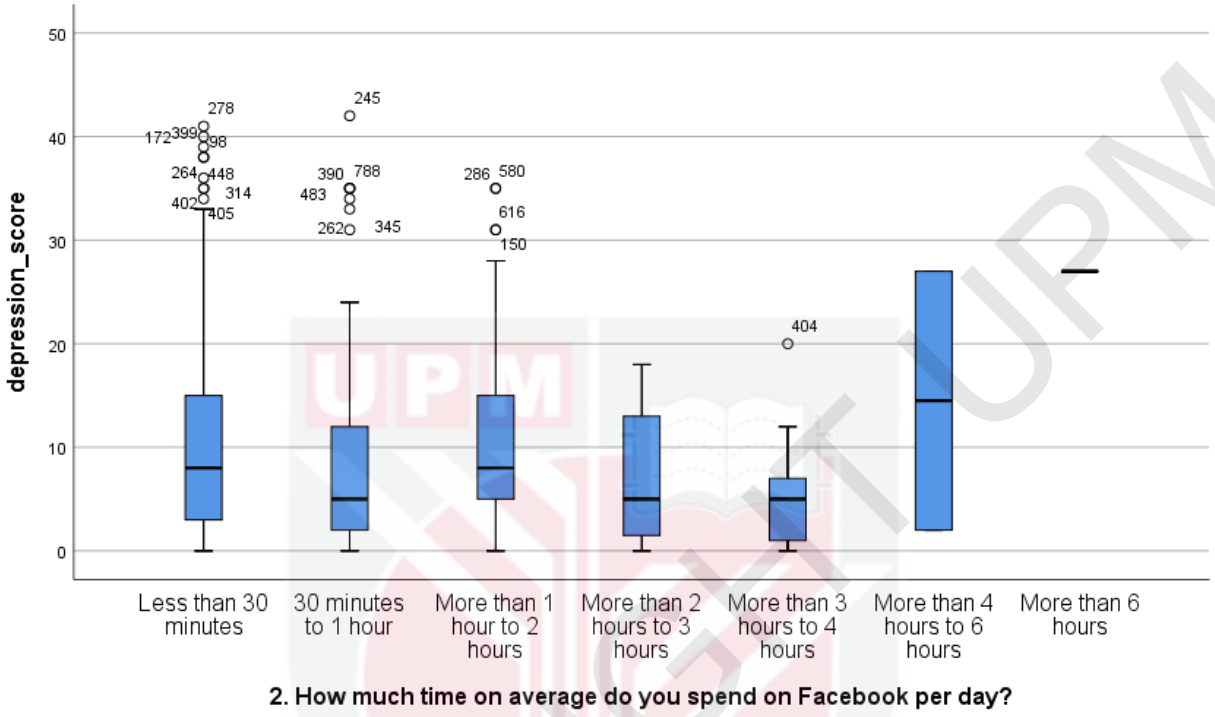

Figure 4.7.1 (d) : Pattern of relationship between daily usage on Facebook and Depression

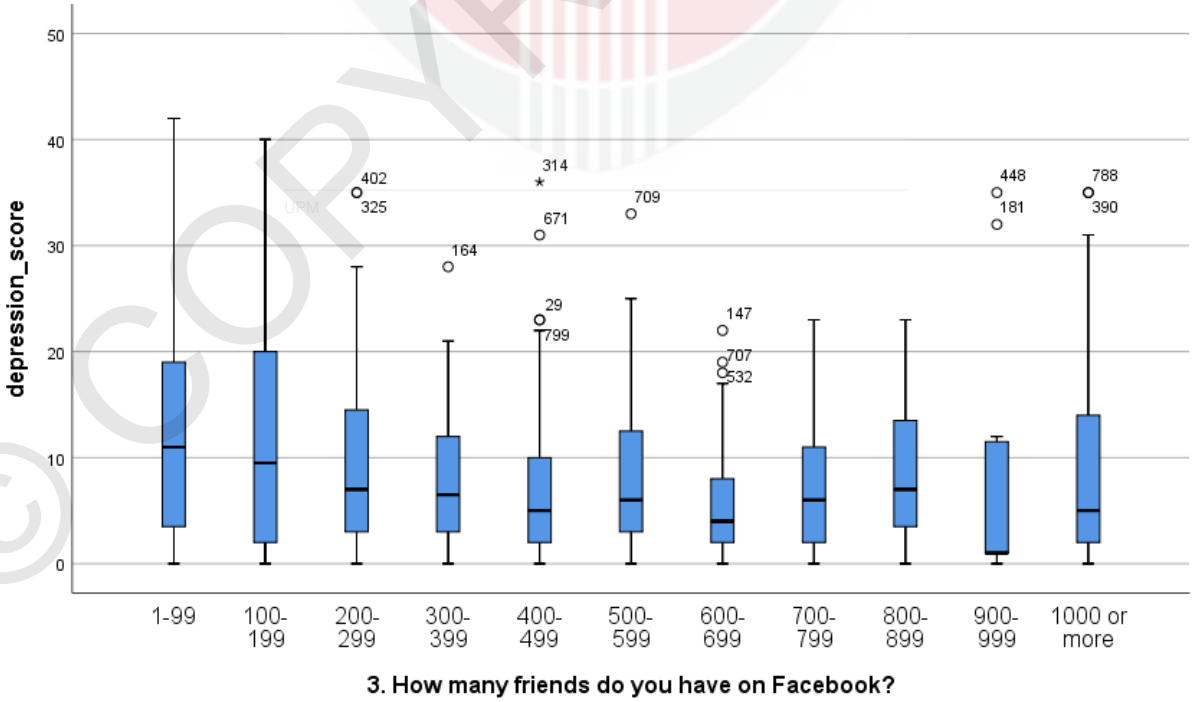

Figure 4.7.1 (e) : Pattern of relationship number of friends on Facebook and Depression

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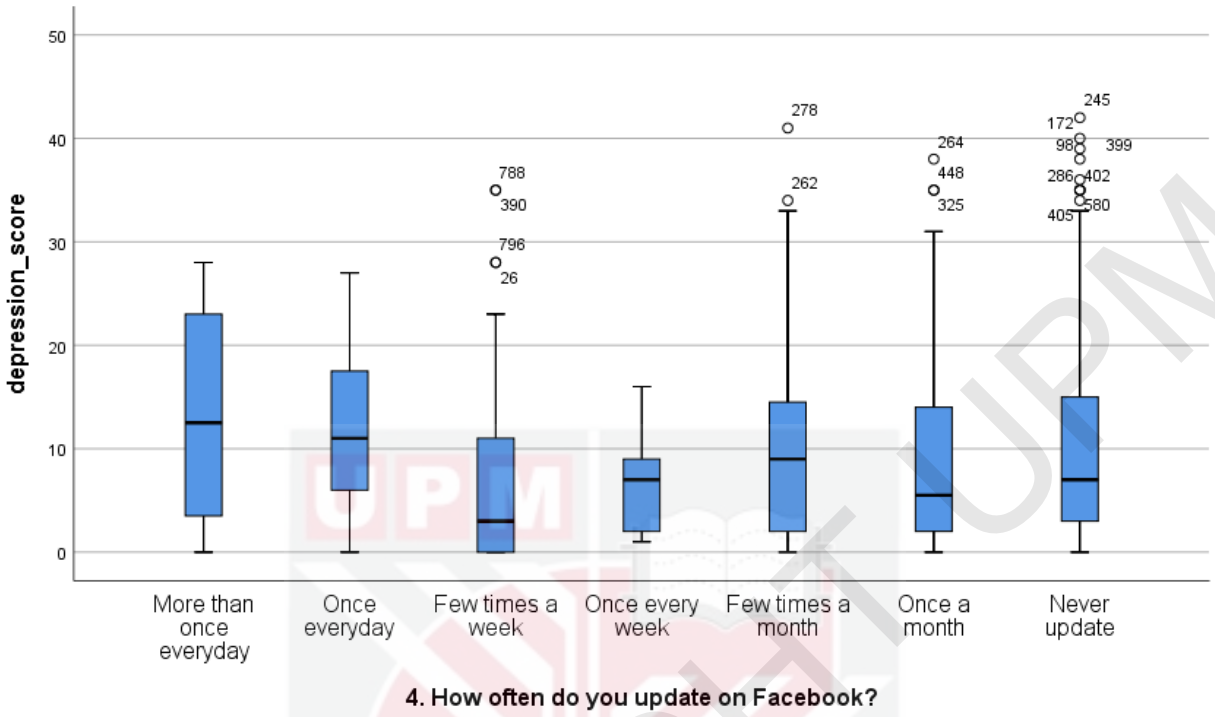

Figure 4.7.1 (f) : Pattern of relationship between frequency of updating on Facebook and Depression

			Anxiety score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	-0.003	-0.107	-0.036
		Sig. (2-tailed)	.	0.945	0.003	0.323
		N	879	751	751	751

Table 4.7.1 (c): Association between Facebook usage and Anxiety

The figures below show the pattern of relationships of Facebook usage and anxiety score among UPM undergraduate students.

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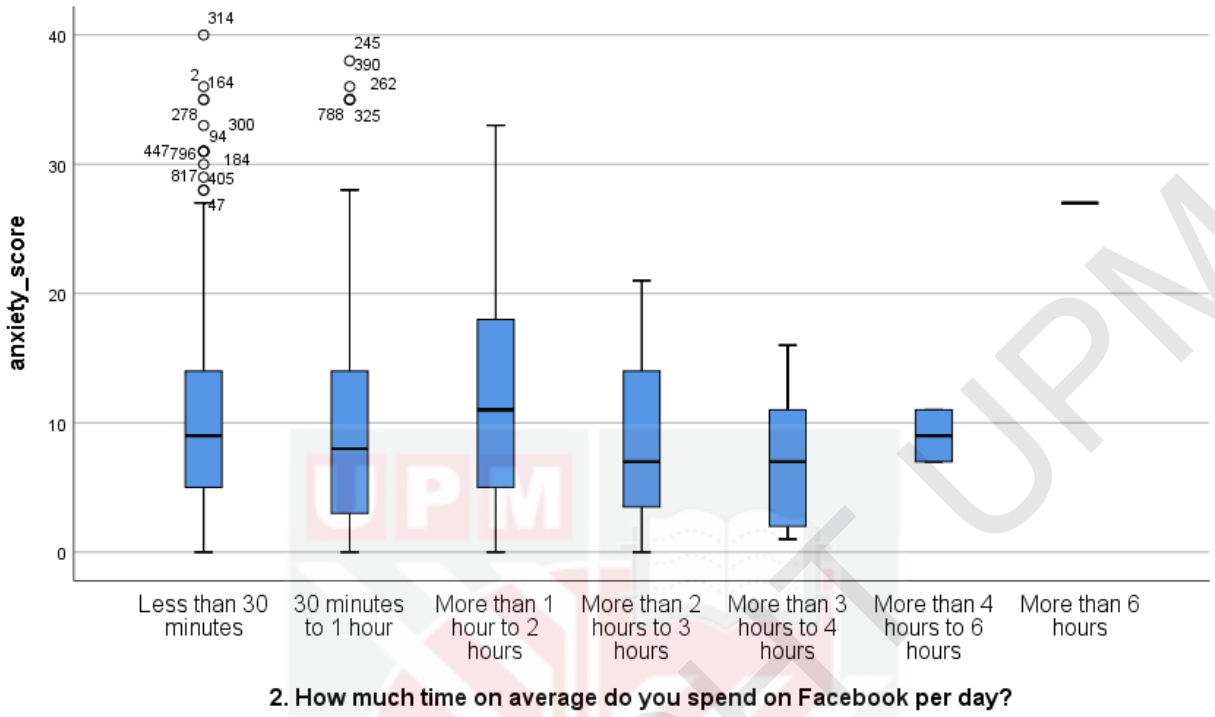

Figure 4.7.1 (g) : Pattern of relationship between daily usage on Facebook and Anxiety

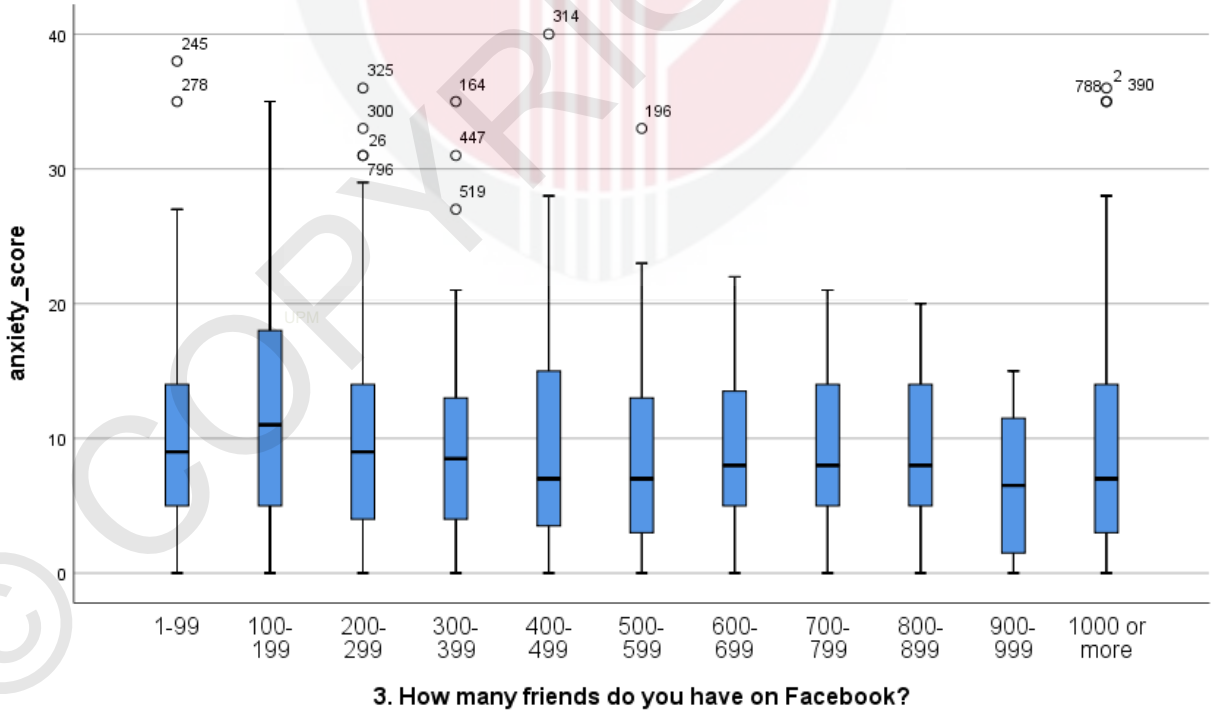

Figure 4.7.1 (h) : Pattern of relationship between number of friends on Facebook and Anxiety

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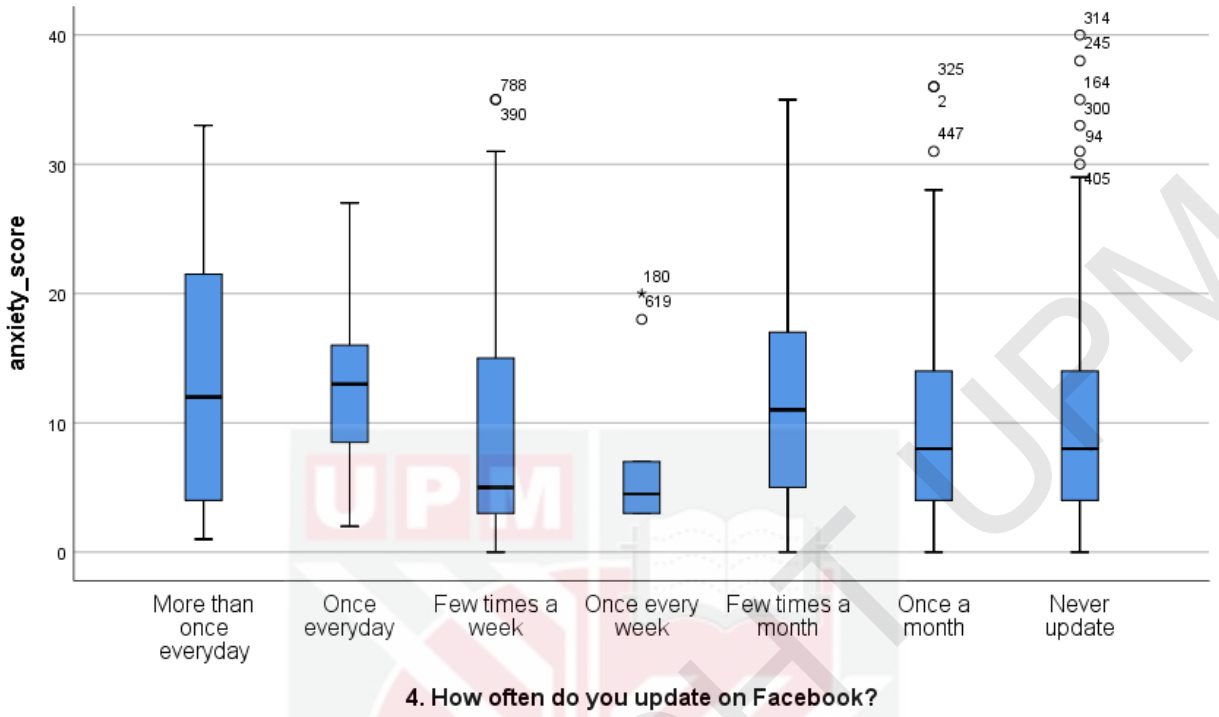

Figure 4.7.1 (i) : Pattern of relationship between frequency of updating on Facebook and Anxiety

			Stress score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Stress score	Correlation Coefficient	1.000	-0.016	-0.083	-0.019
		Sig. (2-tailed)	.	0.670	0.023	0.599
		N	879	751	751	751

Table 4.7.1 (d): Association between Facebook usage and Stress

The figures below show the pattern of relationships of Facebook usage and stress score among UPM undergraduate students.

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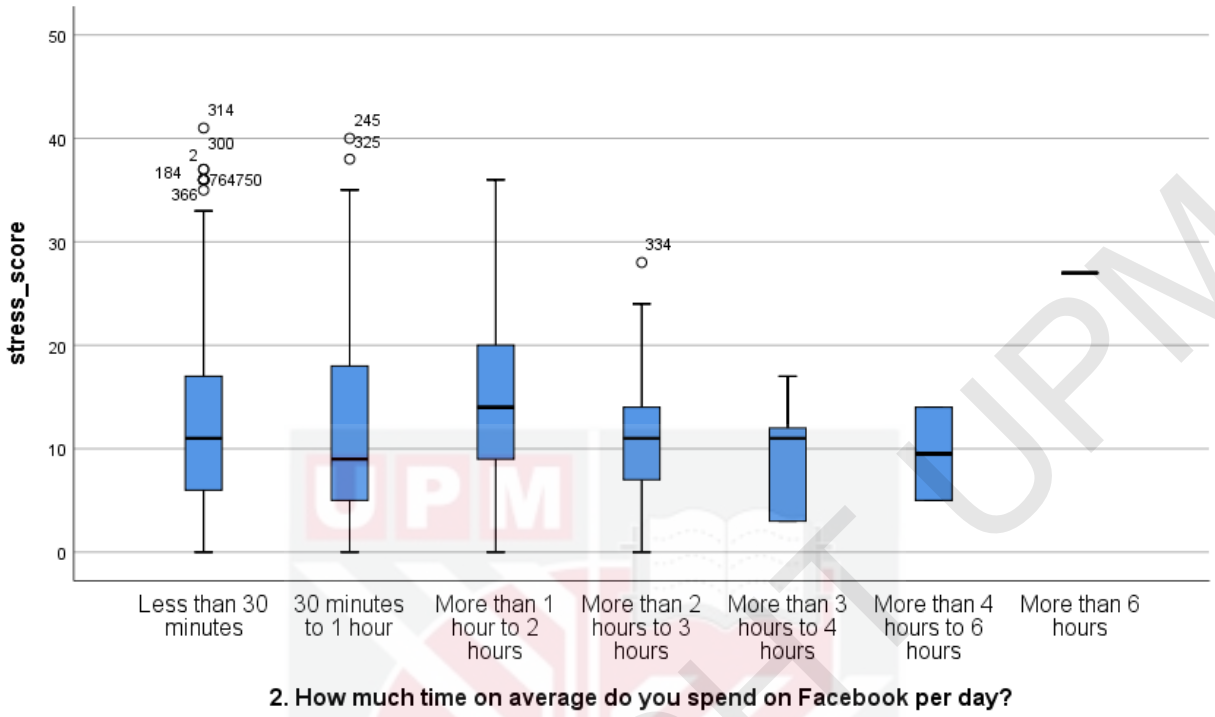

Figure 4.7.1 (j) : Pattern of relationship between daily usage on Facebook and Stress

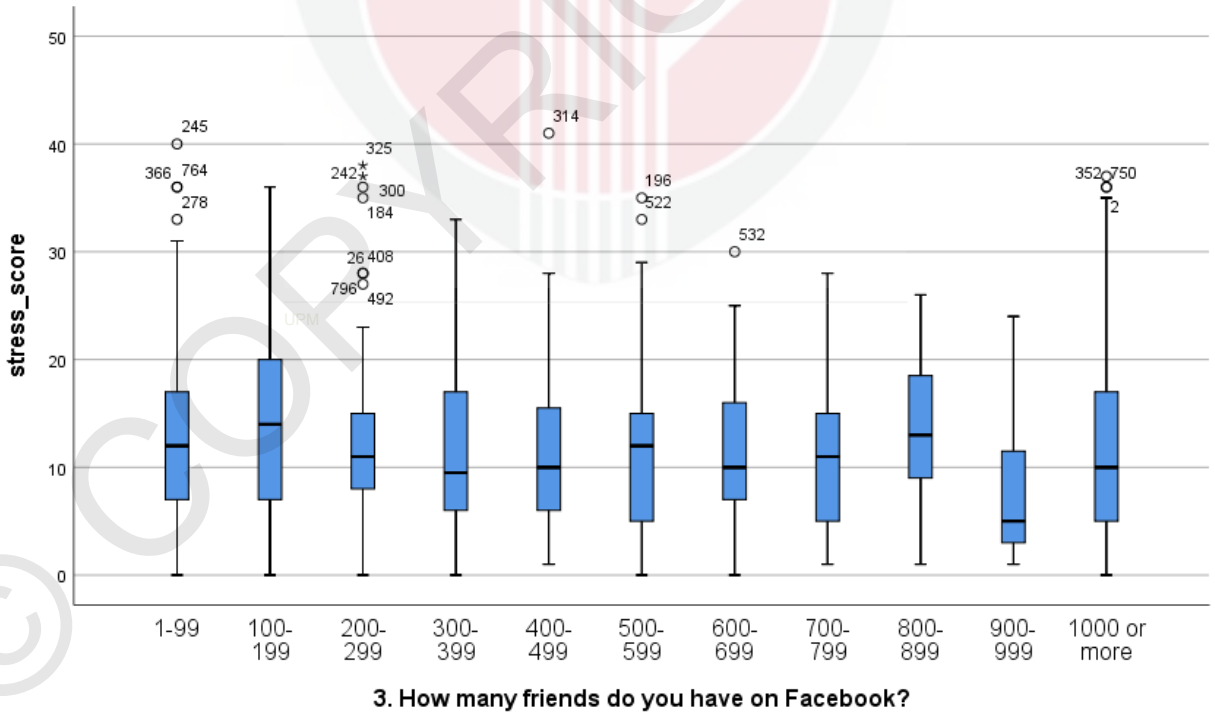

Figure 4.7.1 (k) : Pattern of relationship between number of friends on Facebook and Stress

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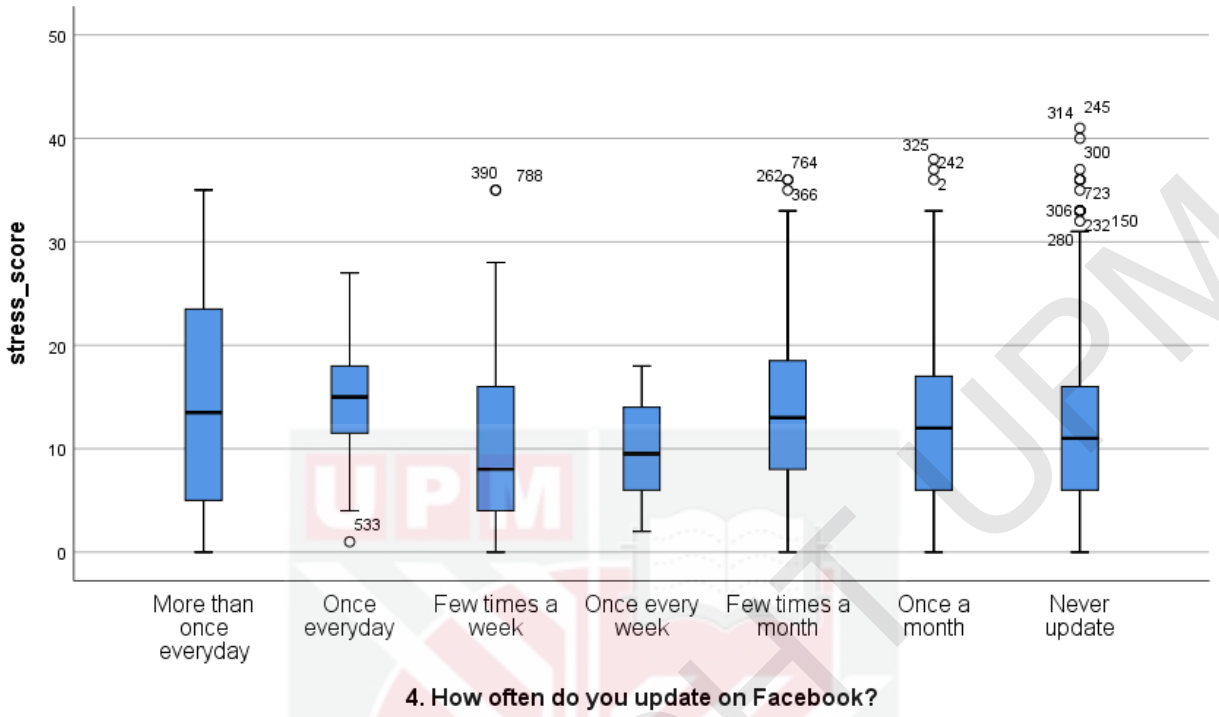

Figure 4.7.1 (l) : Pattern of relationship between frequency of updating on Facebook and Stress

4.7.2 Instagram

Table 4.7.2 (a) shows the result of the Mann-Whitney test to determine the association of Instagram use and mental health among undergraduate students of UPM. From the test, the p-value is 0.684 ($p>0.05$), hence there is no significant difference between having an Instagram account and depression among these undergraduate students. There is also no association between having an Instagram account and anxiety disorder among the students because the p-value of Mann-Whitney test for this association is 0.681 ($p>0.05$). Lastly for stress, the p-value is 0.601 which is $p>0.05$. Thus, there is no significant difference between having an Instagram account and being stressed among the students.

	Depression score	Anxiety Score	Stress Score
Median scores	7.00	9.00	12.00

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Interquartile range	12	10	11
Mann-Whitney U	16925.500	16918.000	16738.500
Z	-.406	-.411	-.523
Asymp. Sig. (2-tailed)	.684	.681	.601

Table 4.7.2 (a): Association between having an Instagram account and Mental Health

The figures below show the pattern of relationships of having an Instagram account and mental health which are depression, anxiety and stress score respectively among UPM undergraduate students.

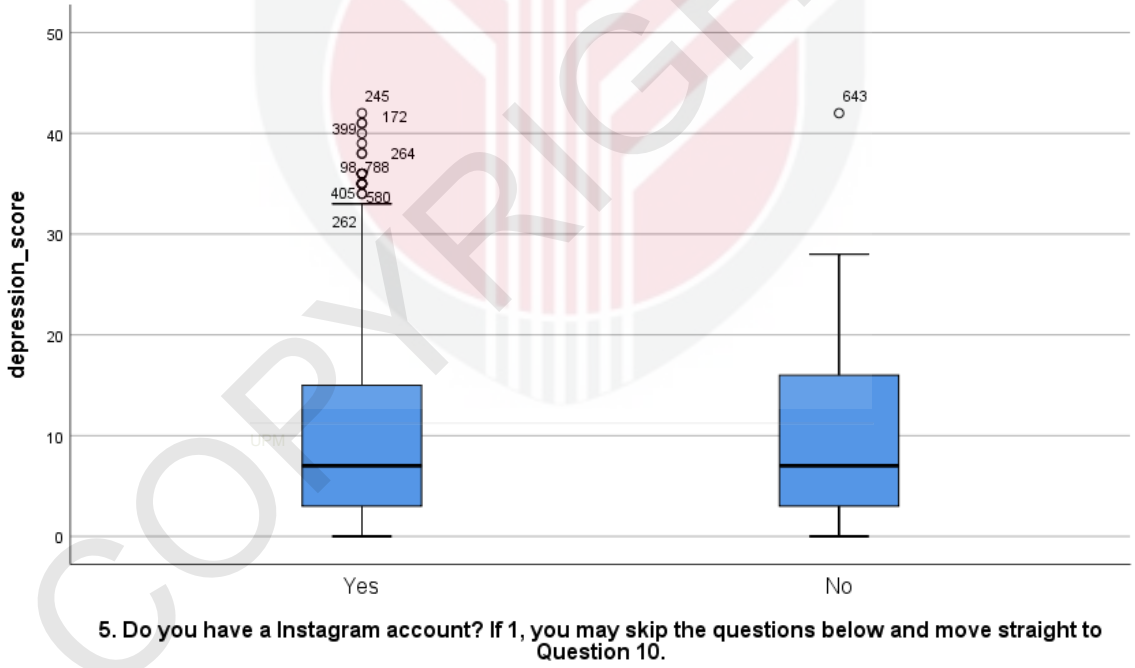

Figure 4.7.2 (a) : Pattern of relationship between having an Instagram account and Depression

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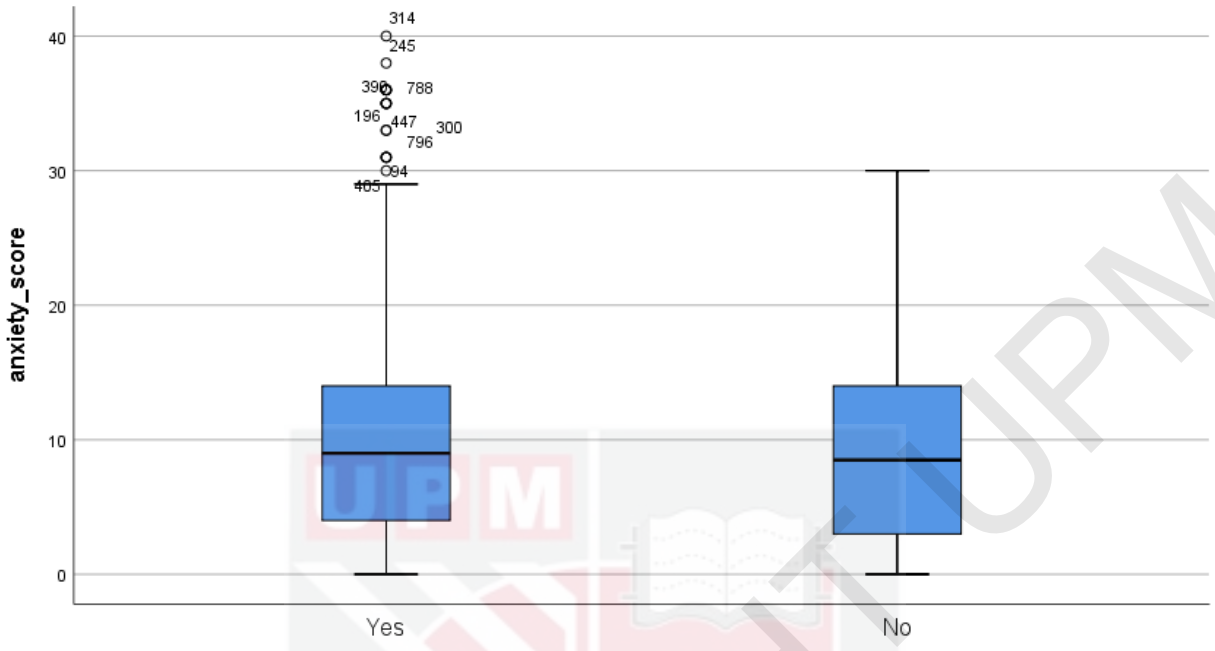

Figure 4.7.2 (b) : Pattern of relationship between having an Instagram account and Anxiety

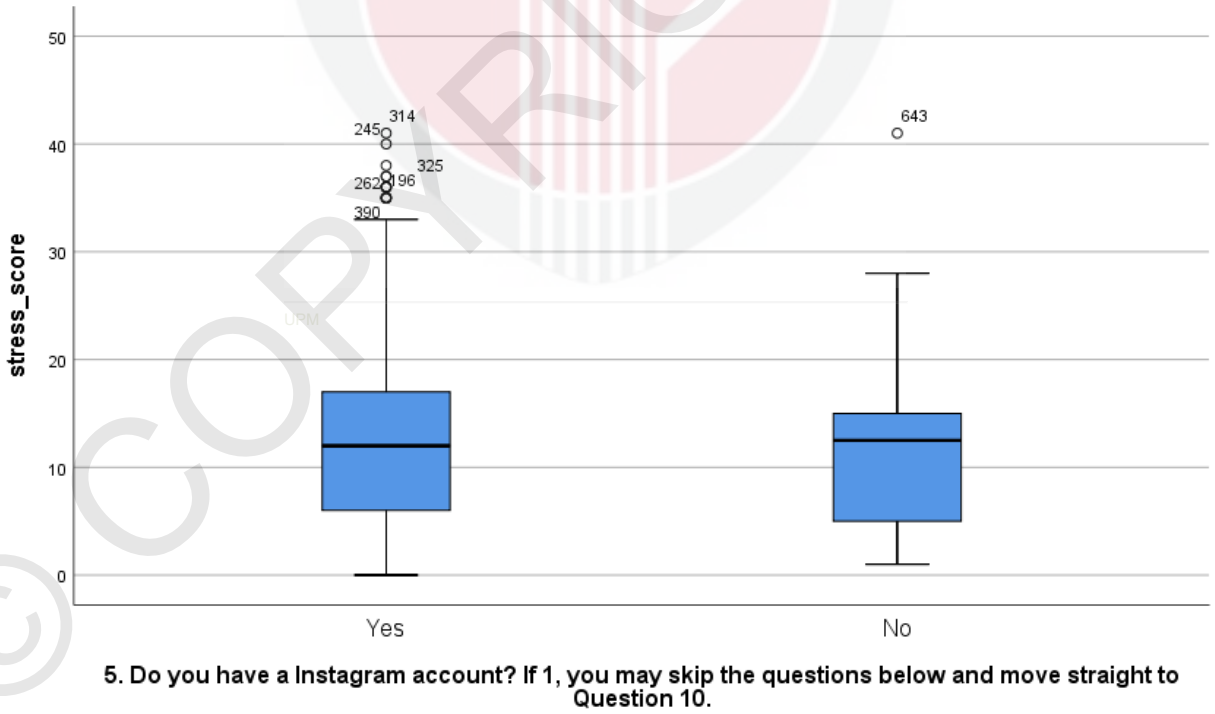

Figure 4.7.2 (c) : Pattern of relationship between having an Instagram account and Stress

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For Spearman Correlation, there is a (r = 0.022, p = 0.531). The same goes with the relationship between daily usage of Instagram and anxiety level where it is positively correlated but is not statistically significant (r = 0.032, p = 0.359). Thus, the null hypothesis is rejected. On the other hand, for the number of followers on Instagram, all had shown a negative but statistically significant relationship with depression (r = -0.134, p = 0.000), anxiety (r = -0.094, p = 0.006) and stress (r =-0.079, p = 0.023) respectively. This proves that lower number of followers is associated with higher depression, anxiety and stress. Nevertheless, there is a weak negative correlation that is not statistically significant between the number of accounts followed on Instagram and stress (r = -0.047, p = 0.173). The same correlation goes to the relationship between updating on Instagram and anxiety level (r = -0.037, p = 0.288). Hence, there is no association between updating on Instagram and anxiety. On the other hand, there is a significant association between updating on Instagram and stress level although the correlation is weak and negative (r = -0.073, p = 0.036). This relationship explains that although the respondents update their Instagram seldomly, they are still associated with high level of stress.

			Depression score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.026	-0.134	-0.072	-0.031
		Sig. (2-tailed)	.	0.446	0.000	0.036	0.376
		N	879	837	837	837	837

Table 4.7.2 (b): Association between Instagram usage and Depression

The figures below show the pattern of relationships of Instagram usage and depression score among UPM undergraduate students.

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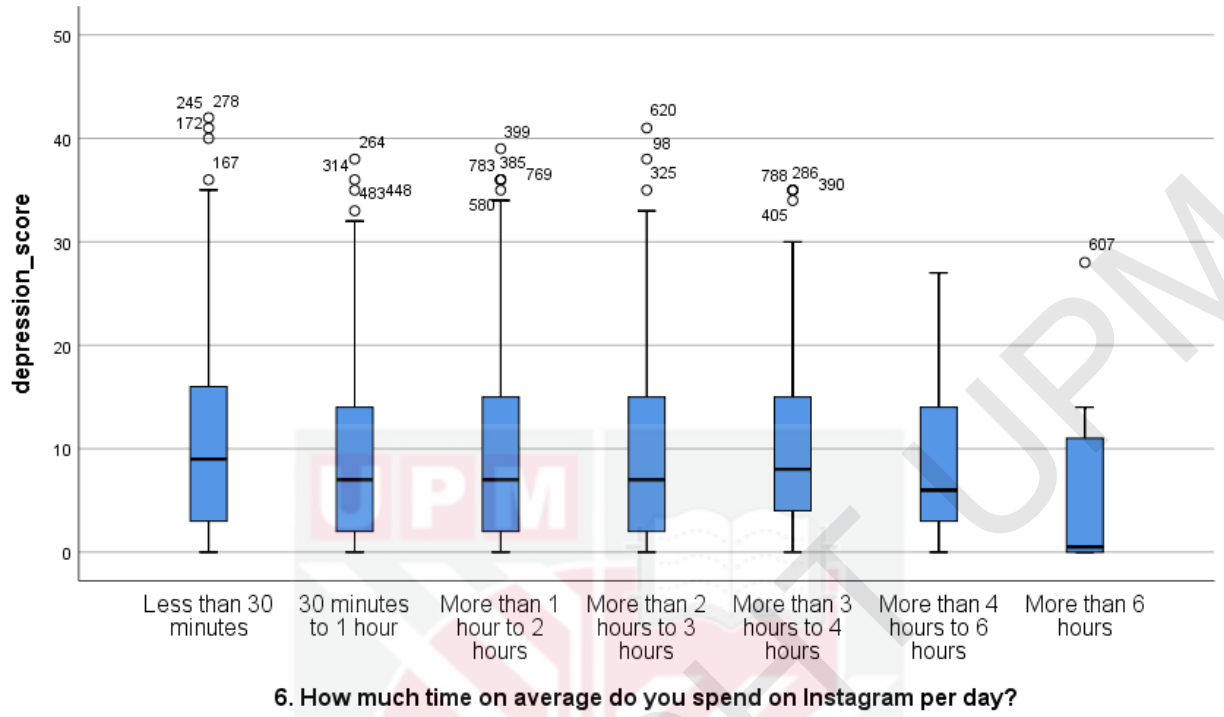

Figure 4.7.2 (d) : Pattern of relationship between daily usage on Instagram and Depression

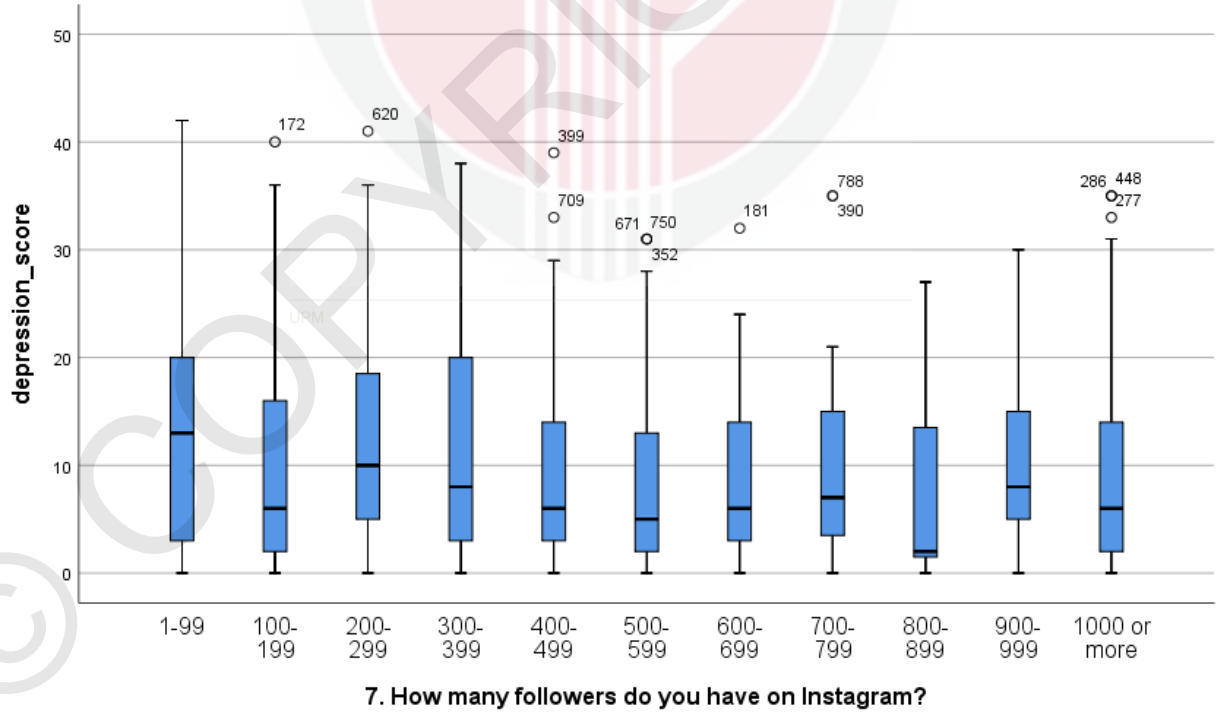

Figure 4.7.2 (e) : Pattern of relationship number of followers on Instagram and Depression

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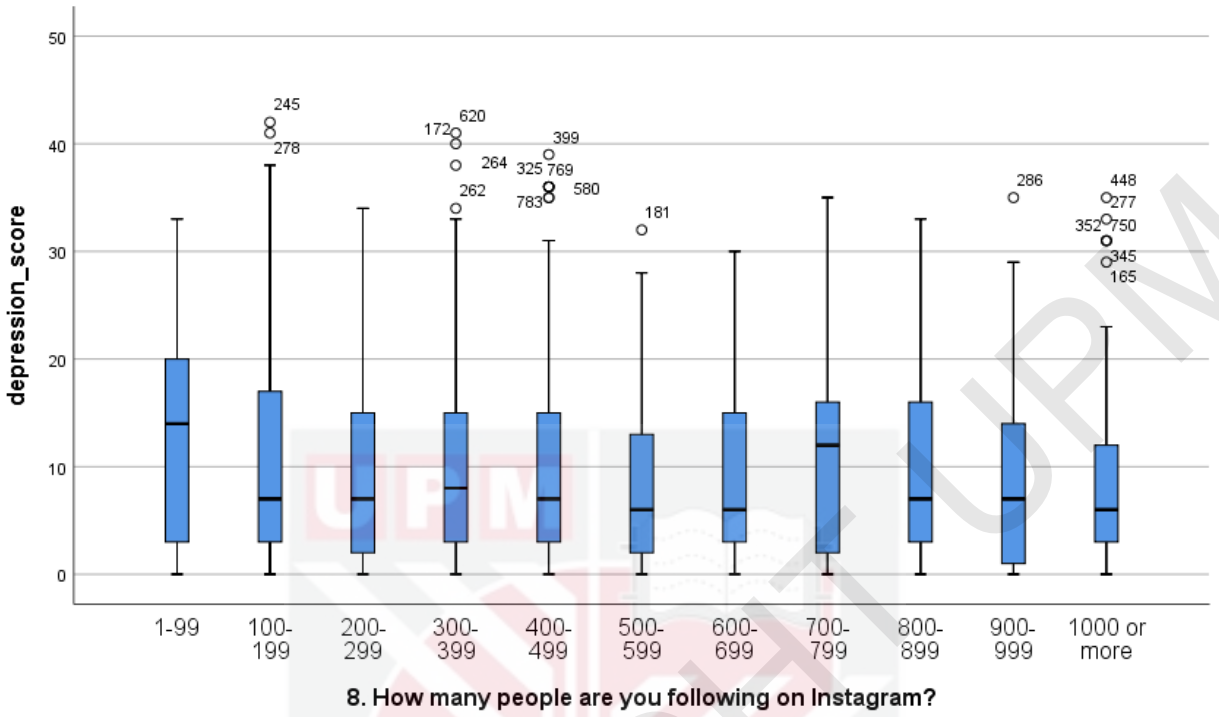

Figure 4.7.2 (f) : Pattern of relationship number of following on Instagram and Depression

Figure 4.7.2 (g) : Pattern of relationship between frequency of updating on Instagram and Depression

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			Anxiety score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.032	-0.094	-0.044	-0.037
		Sig. (2-tailed)	.	0.359	0.006	0.204	0.288
		N	879	837	837	837	837

Table 4.7.2 (c): Association between Instagram usage and Anxiety

The figures below show the pattern of relationships of Instagram usage and anxiety score among UPM undergraduate students.

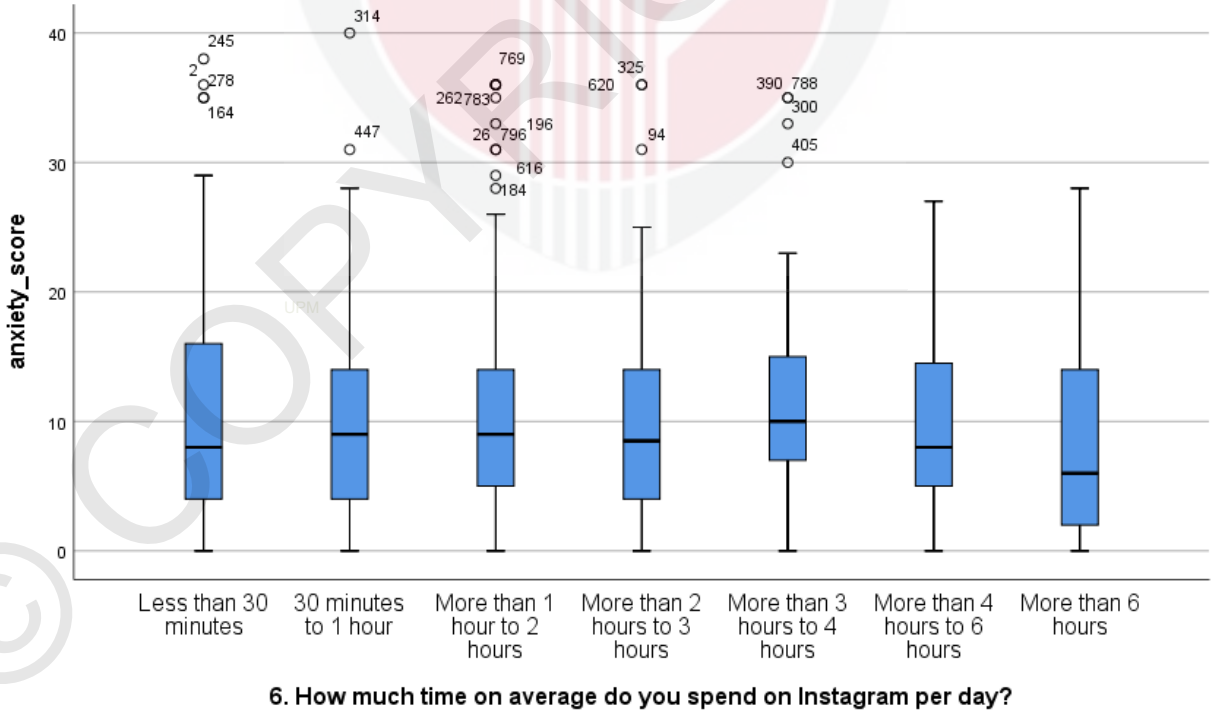

Figure 4.7.2 (h) : Pattern of relationship between daily usage on Instagram and Anxiety

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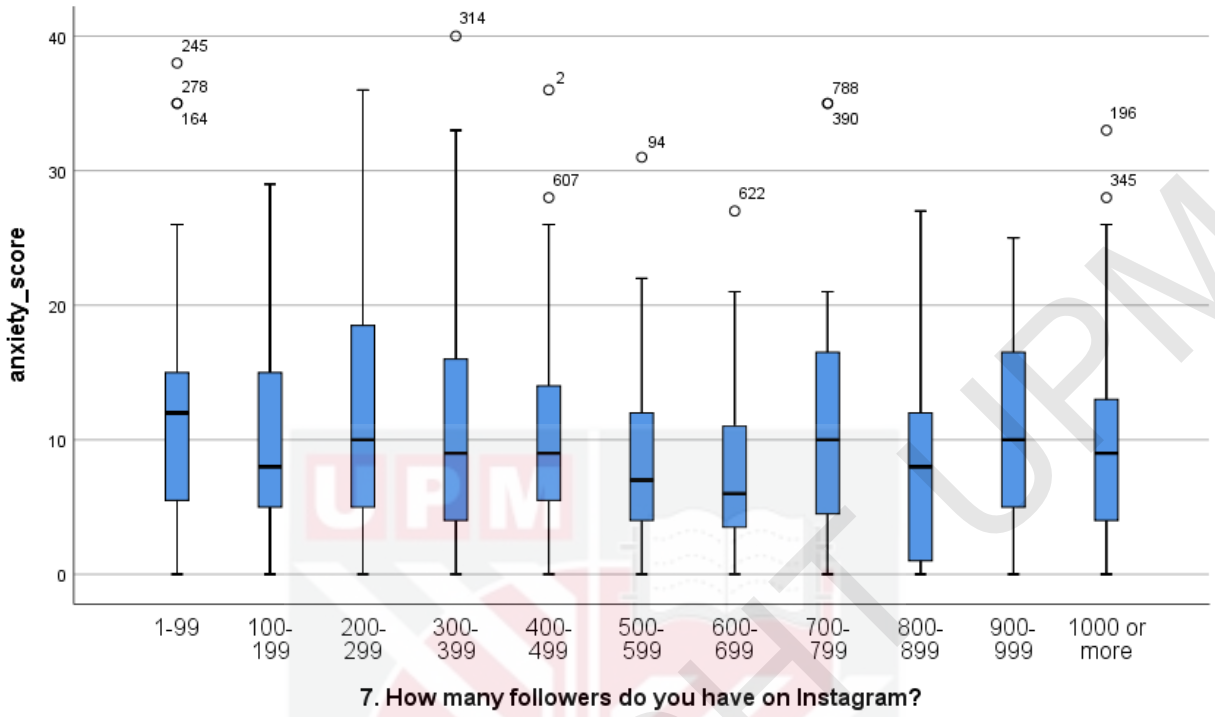

Figure 4.7.2 (i) : Pattern of relationship between number of followers on Instagram and Anxiety

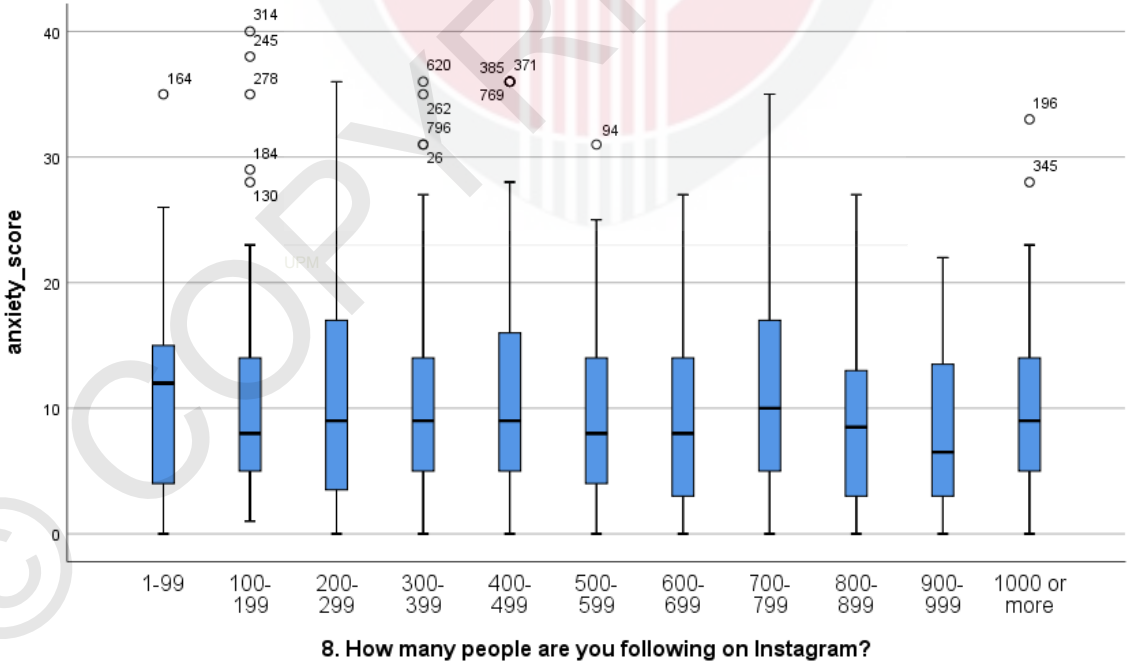

Figure 4.7.2 (j) : Pattern of relationship between number of following on Instagram and Anxiety

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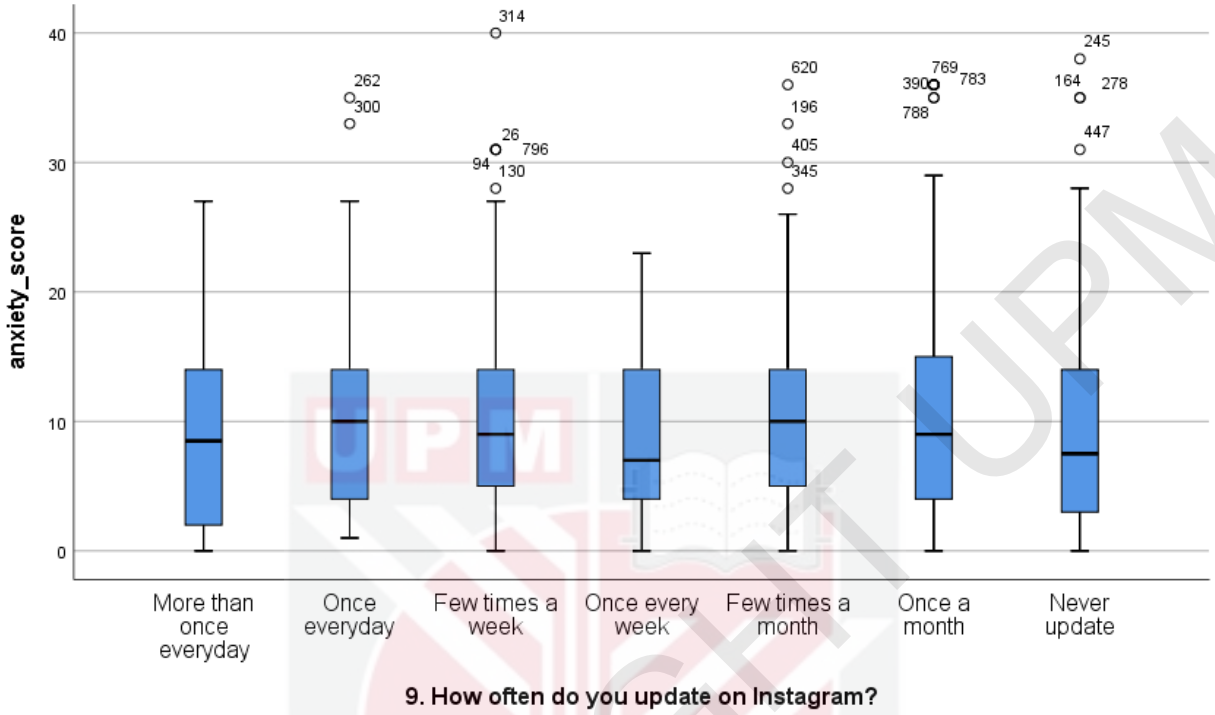

Figure 4.7.2 (k) : Pattern of relationship between frequency of updating on Instagram and Anxiety

			Stress score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.022	-0.079	-0.047	-0.073
		Sig. (2-tailed)	.	0.531	0.023	0.173	0.036
		N	879	837	837	837	837

Table 4.7.2 (d): Association between Instagram usage and Stress

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The figures below show the pattern of relationships of Instagram usage and stress score among UPM undergraduate students.

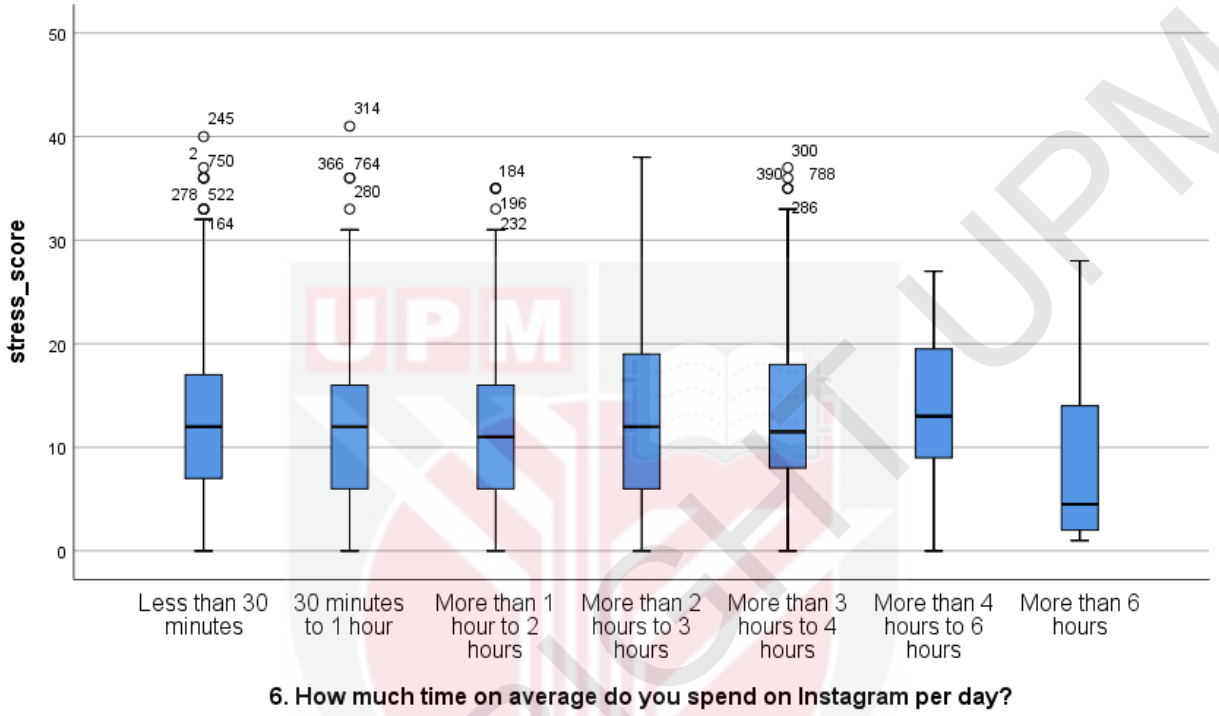

Figure 4.7.2 (l) : Pattern of relationship between daily usage on Instagram and Stress

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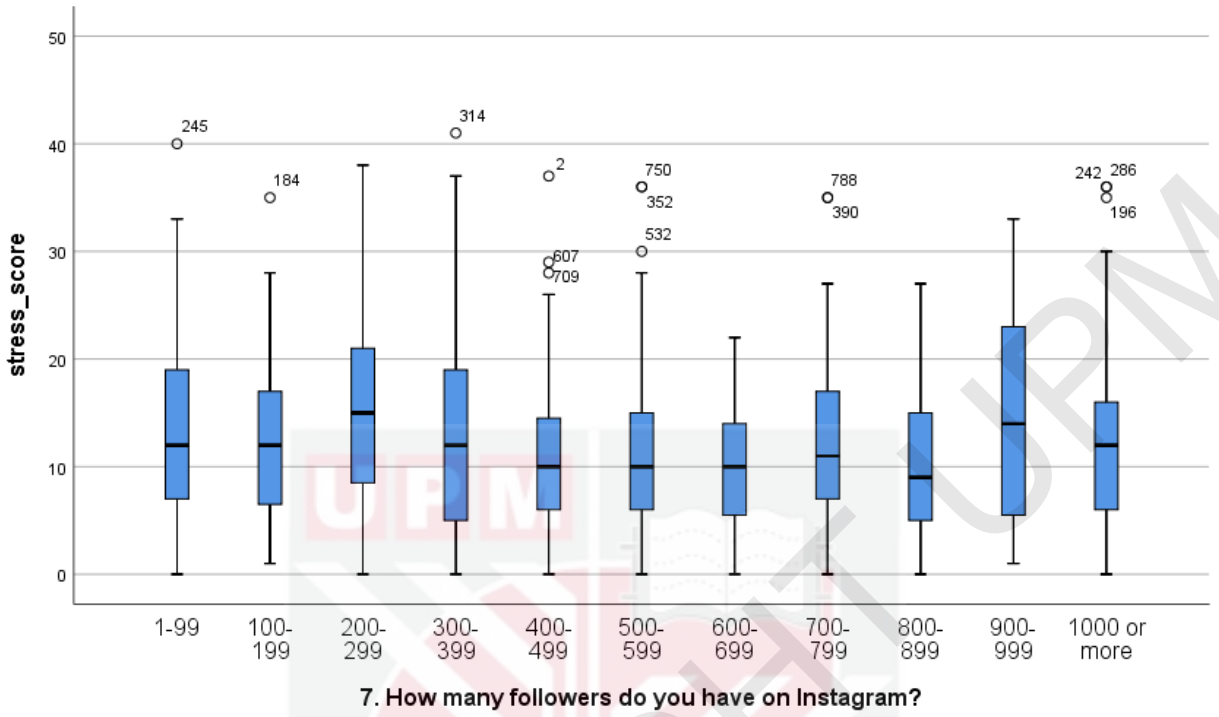

Figure 4.7.2 (m) : Pattern of relationship between number of followers on Instagram and Stress

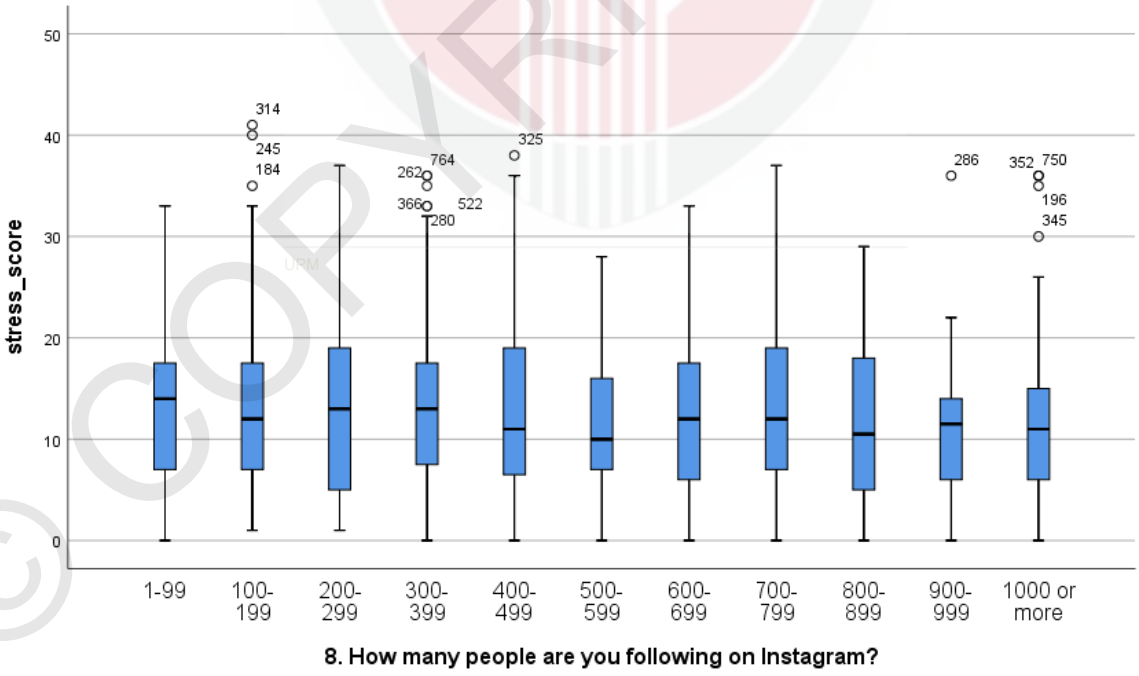

Figure 4.7.2 (n) : Pattern of relationship between number of following on Instagram and Stress

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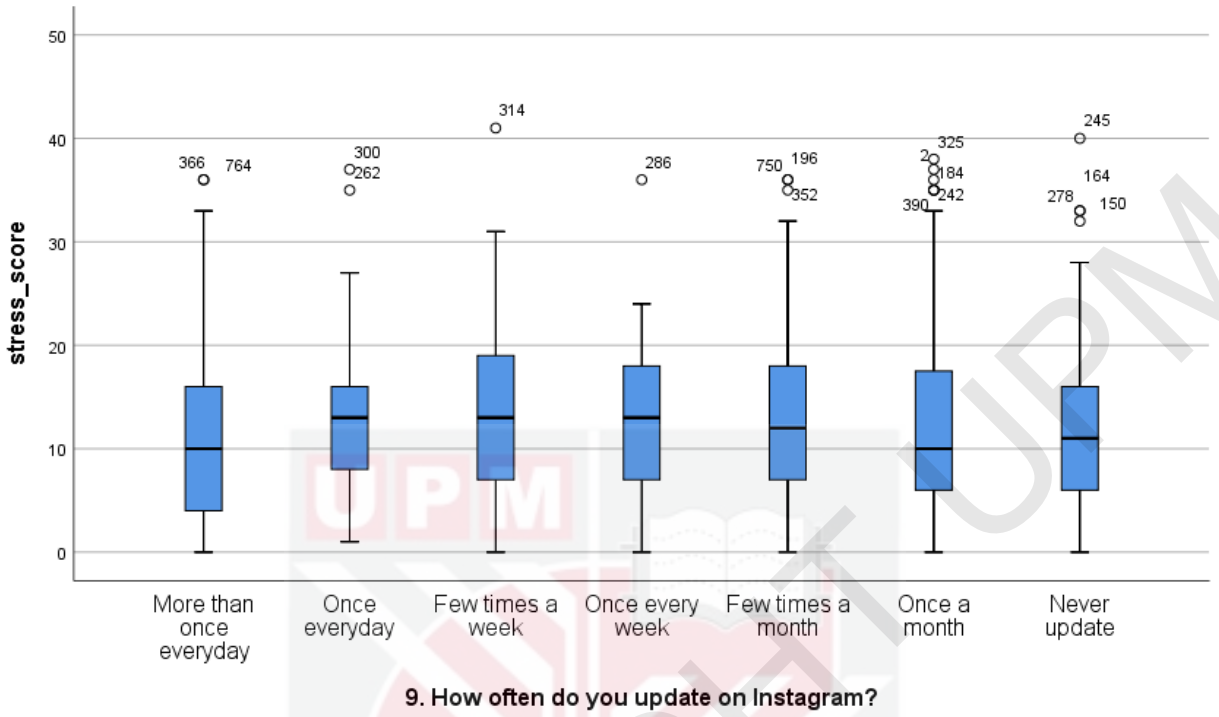

Figure 4.7.2 (o) : Pattern of relationship between frequency of updating on Instagram and Stress

4.7.3 Twitter

Table 4.7.3 (a) shows the result of the Mann-Whitney test to determine the association of Instagram use and mental health among undergraduate students of UPM. From the test, the p-value is 0.148 ($p>0.05$), hence there is no significant difference between having a Twitter account and mental health issues which is depression among these undergraduate students. For anxiety, the p-value of the test is 0.118 ($p>0.05$), thus there is no association between having a Twitter account and getting anxious among UPM undergraduate students. Lastly for stress, the p-value is 0.019 ($p<0.05$). This shows that there is only a significant difference between having a Twitter account and being stressed among these students.

	Depression score	Anxiety Score	Stress Score
Median scores	7.00	9.00	12.00

Interquartile range	12	10	11
Mann-Whitney U	88220.500	87799.500	84926.500
Z	-1.448	-1.561	-2.337
Asymp. Sig. (2-tailed)	.148	.118	.019

Table 4.7.3 (a): Association between having a Twitter account and Mental Health

The figures below show the pattern of relationships of having a Twitter account and mental health which are depression, anxiety and stress score respectively among UPM undergraduate students.

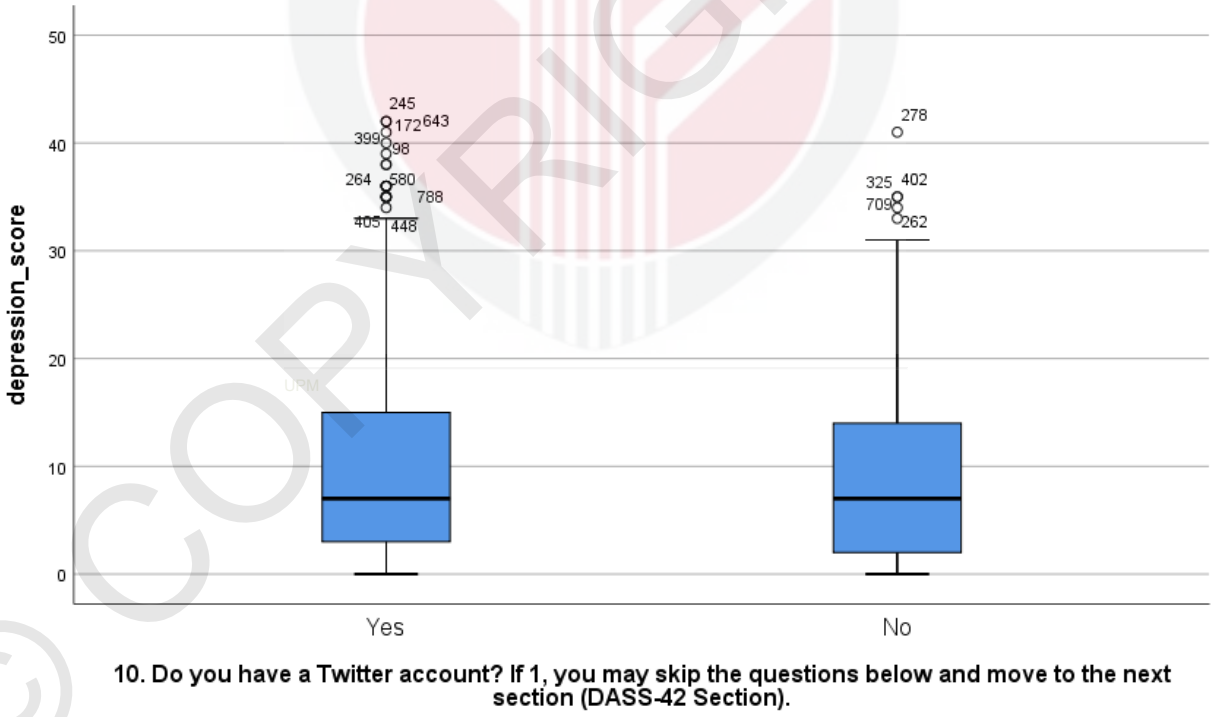

Figure 4.7.3 (a) : Pattern of relationship between having an Twitter account and Depression

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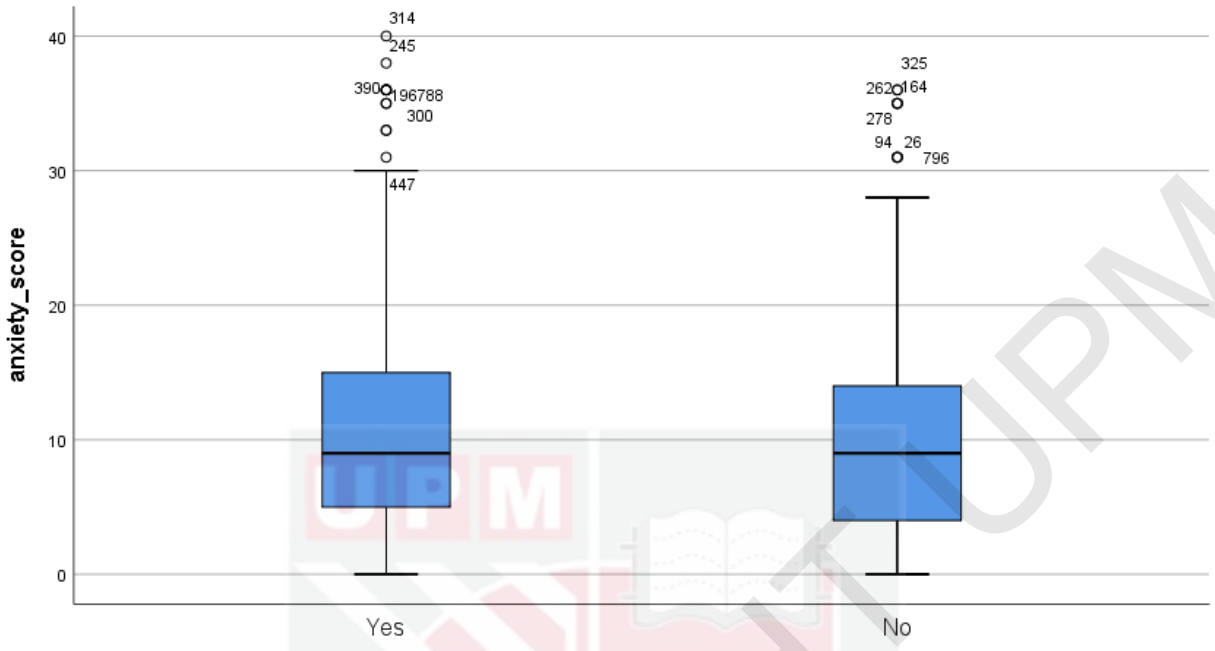

Figure 4.7.3 (b) : Pattern of relationship between having an Twitter account and Anxiety

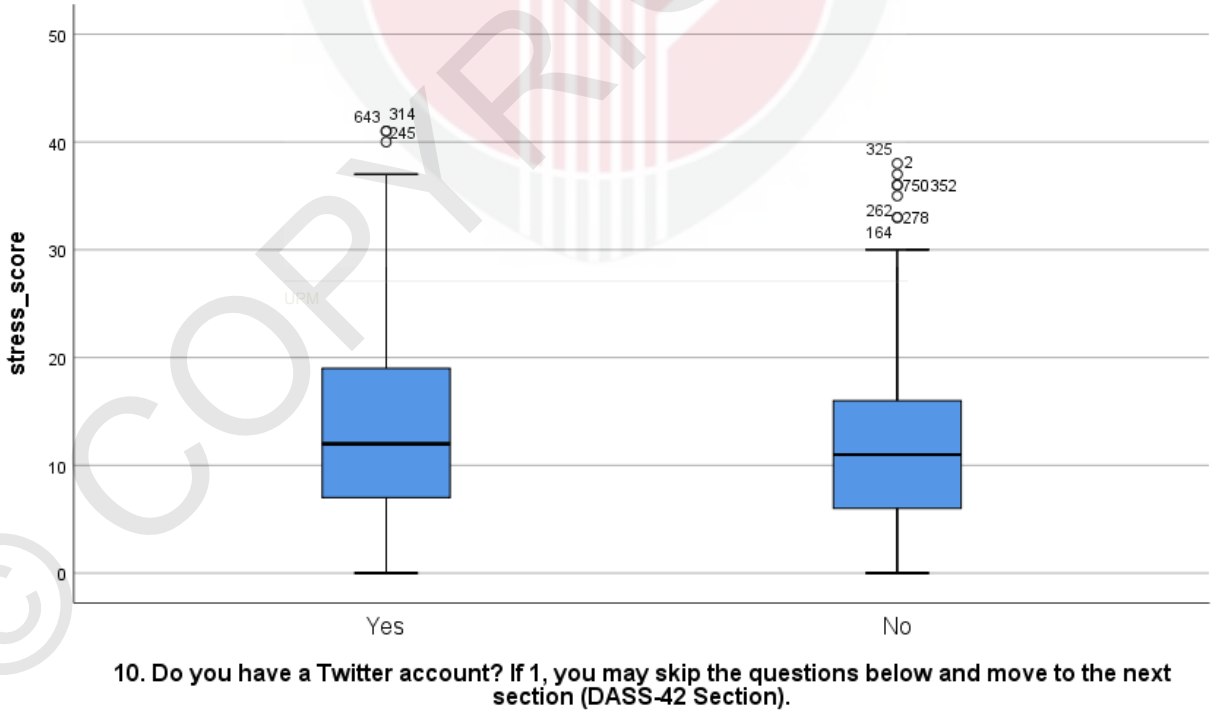

Figure 4.7.3 (c) : Pattern of relationship between having an Twitter account and Stress

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The Spearman Correlation is also done to determine the association between Twitter use and mental health problems among UPM undergraduate students. Daily usage on Twitter is positively correlated with depression (r =0.047, p = 0.287), anxiety (r =0.032, p = 0.464) and stress (r = 0.044, p =0.313) respectively. However, all these correlations are not statistically significant. Hence, the null hypothesis is rejected. As for the number of followers on Twitter, there is too weak to zero correlation with stress (r= -0.001, p = 0.975) and anxiety (r = 0.000, p = 0.997) level each. Both correlations were also not statistically significant. For accounts followed on Twitter, there is a weak, positive relationship with depression level. However, it is not statistically significant (r = 0.048, p = 0.273). This shows that there is no association between the number of accounts followed on Twitter and the depression level. Same goes with the relationship between the number of accounts followed on Twitter and anxiety and stress level. Lastly for the relationship between how often the respondents update on Twitter and depression and anxiety, it is weak and negatively correlated and not significant. Nevertheless, there is a significant relationship between updating Twitter and stress level and negatively correlated (r = -0.112, p = 0.011). This shows that there is an association between the variables and visualizes that updating Twitter seldomly may lead to an increase in the stress level among respondents.

			Depression score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Depression score	Correlation Coefficient	1.000	0.047	-0.062	0.048	-0.070
		Sig. (2-tailed)	.	0.287	0.156	0.273	0.111
		N	879	517	517	517	517

Table 4.7.3 (b): Association between Twitter usage and Depression

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The figures below show the pattern of relationships of Twitter usage and depression score among UPM undergraduate students.

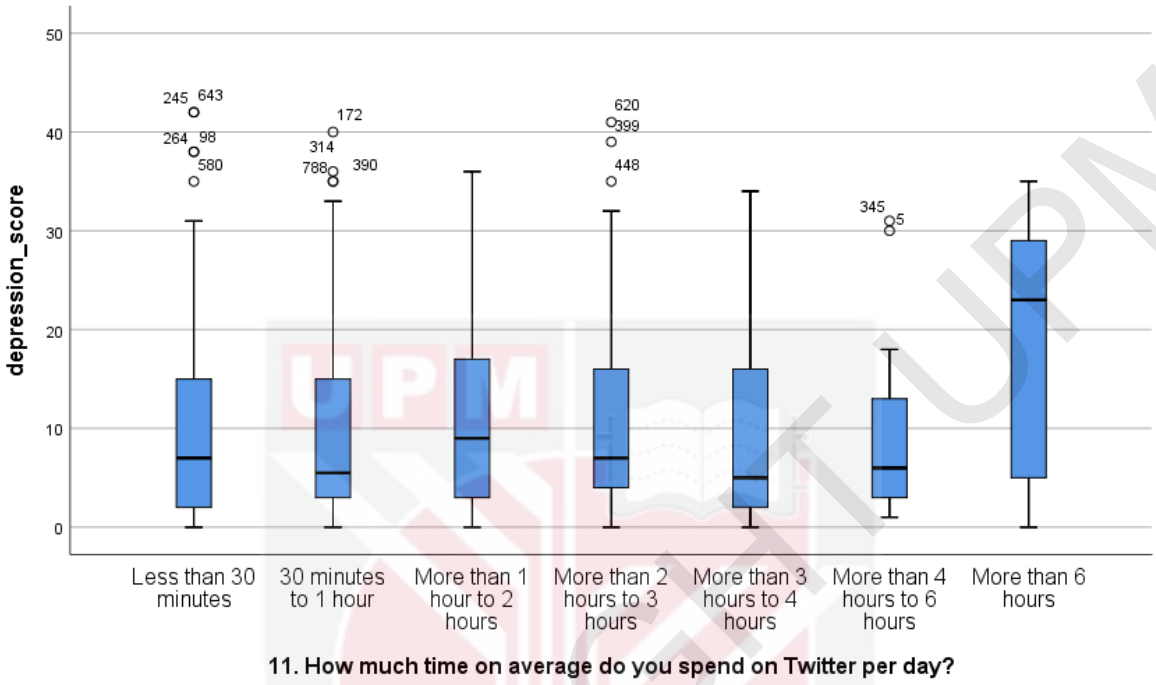

Figure 4.7.3 (d) : Pattern of relationship between daily usage on Twitter and Depression

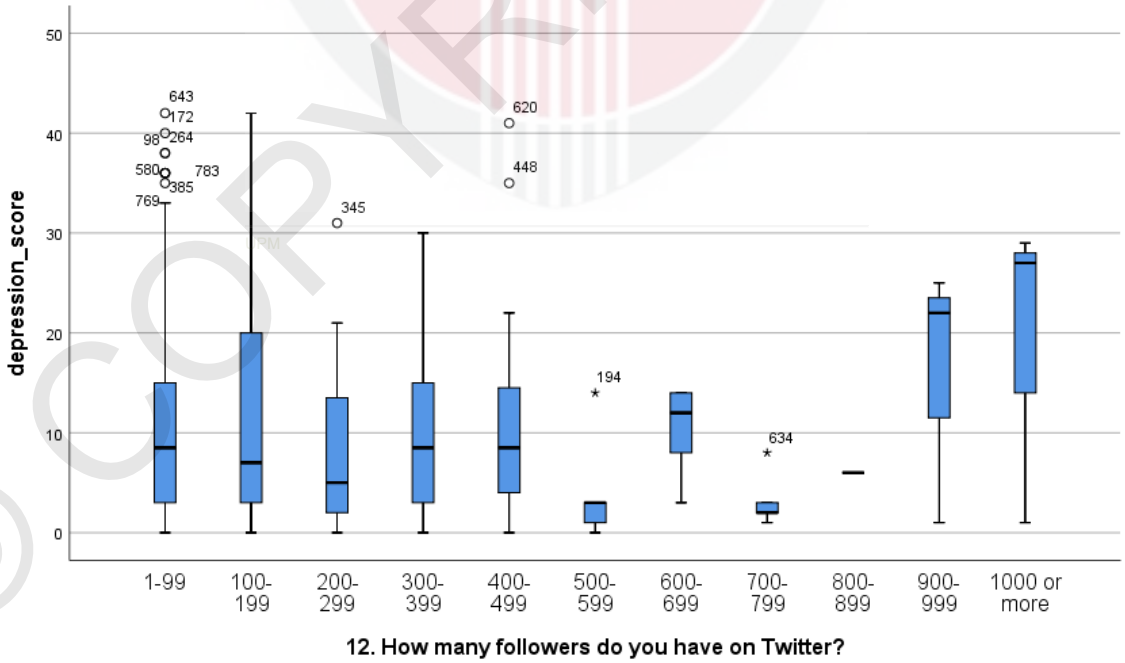

Figure 4.7.3 (e) : Pattern of relationship between number of followers on Twitter and Depression

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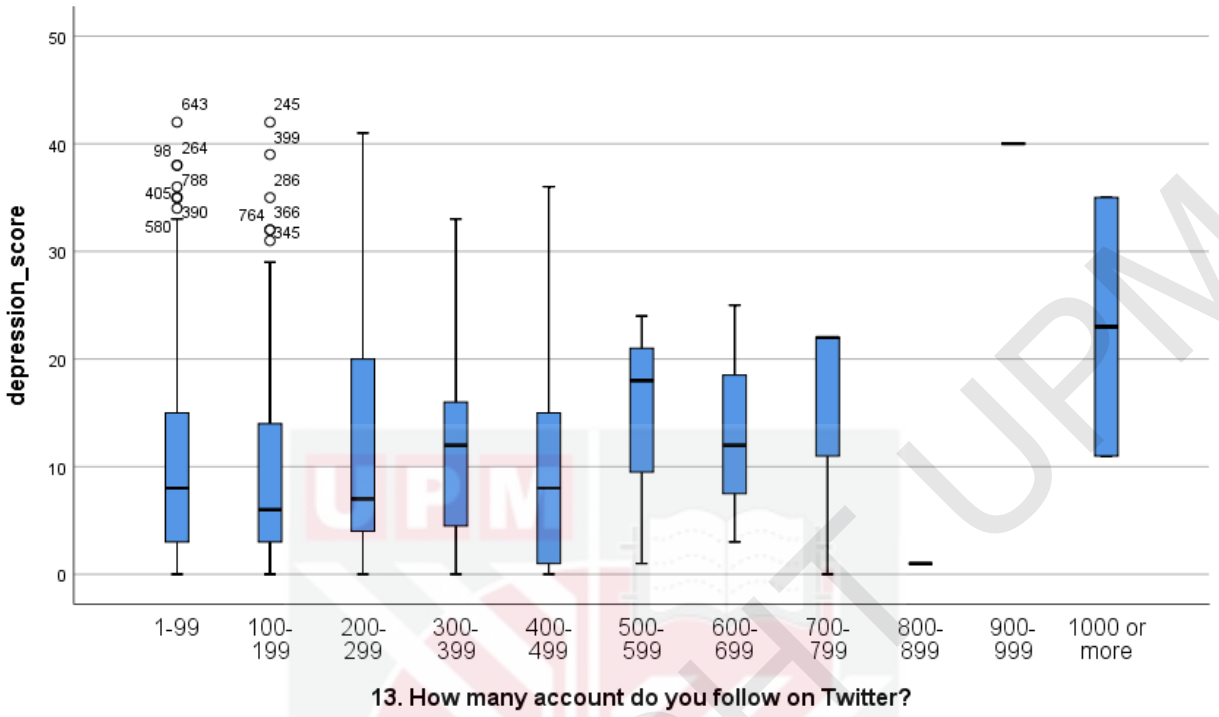

Figure 4.7.3 (f) : Pattern of relationship between number of following on Twitter and Depression

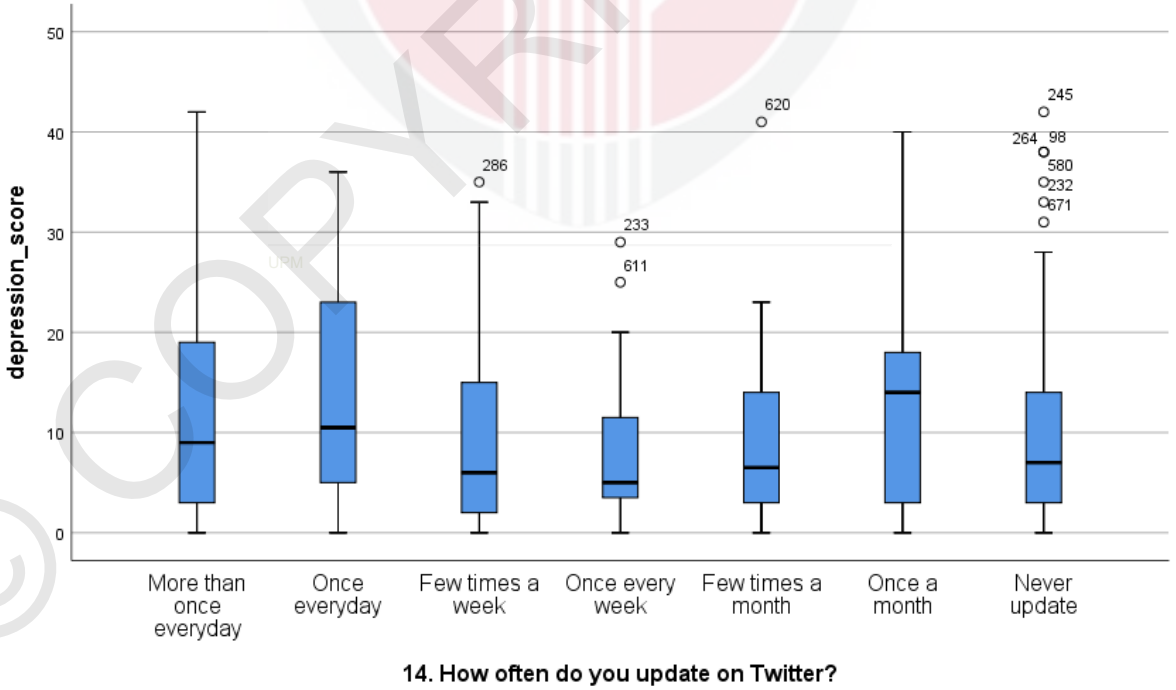

Figure 4.7.3 (g) : Pattern of relationship between frequency of updating on Twitter and Depression

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			Anxiety score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.032	0.000	0.057	-0.038
		Sig. (2-tailed)	.	0.464	0.997	0.197	0.383
		N	879	517	517	517	517

Table: 4.7.3 (c): Association between Twitter usage and Anxiety

The figures below show the pattern of relationships of Twitter usage and anxiety score among UPM undergraduate students.

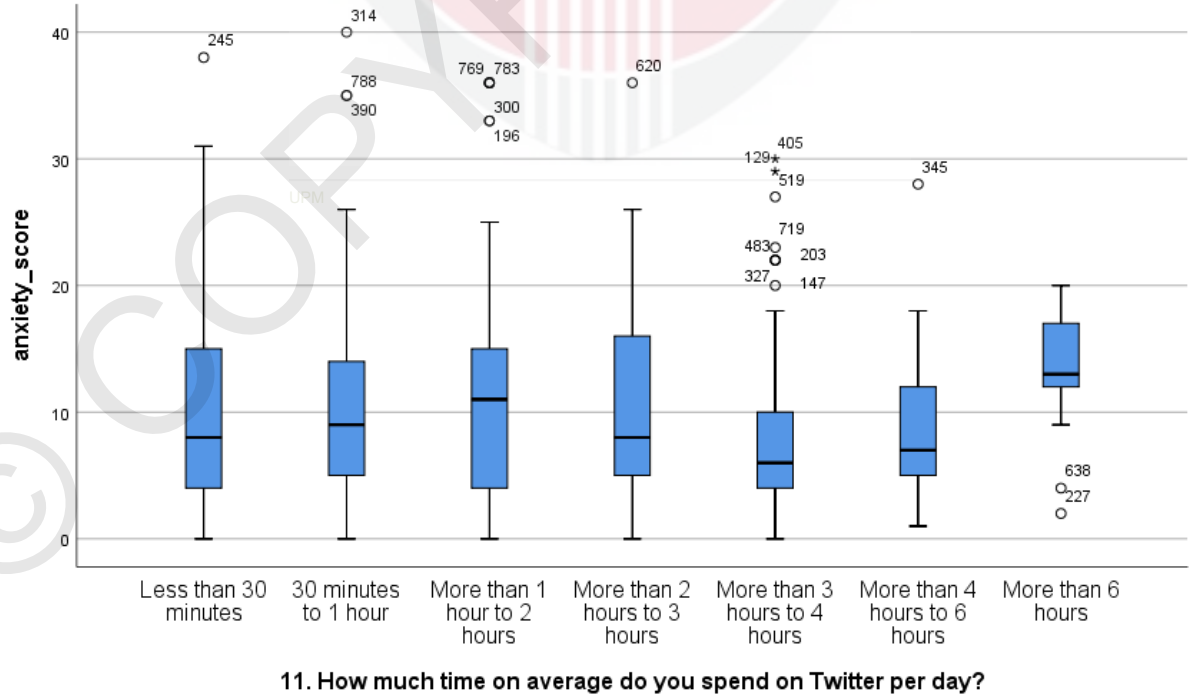

Figure 4.7.3 (h) : Pattern of relationship between daily usage on Twitter and Anxiety

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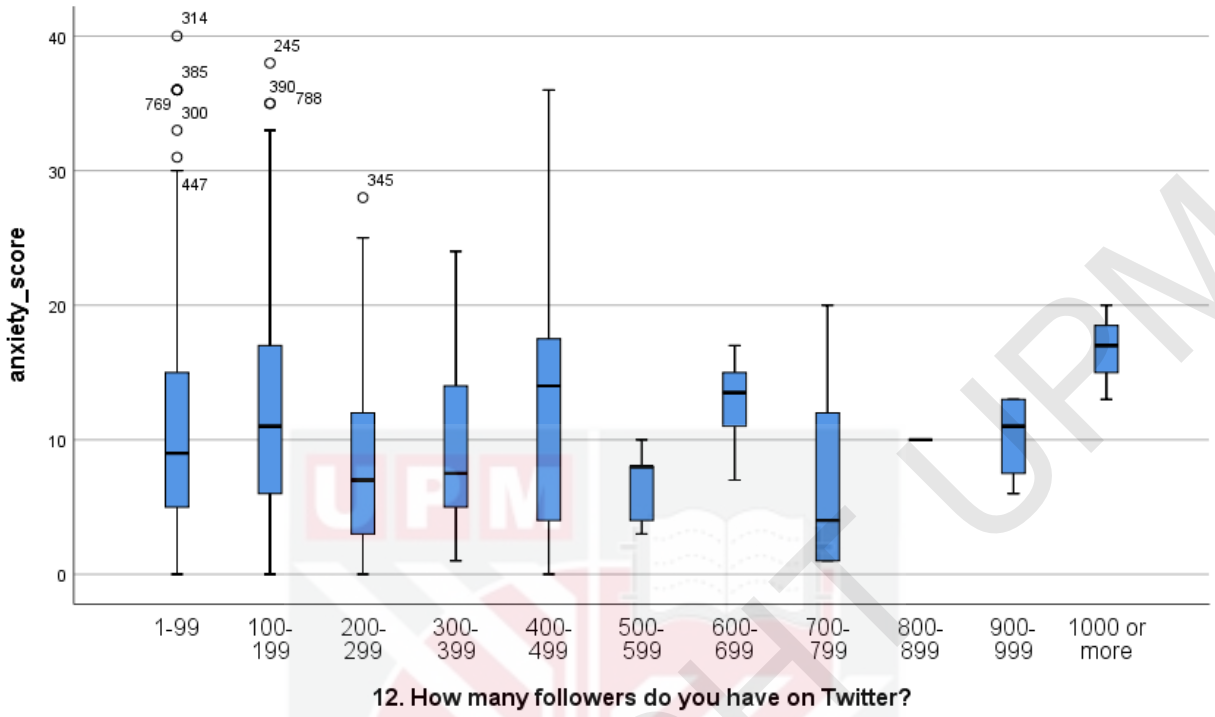

Figure 4.7.3 (i) : Pattern of relationship between number of followers on Twitter and Anxiety

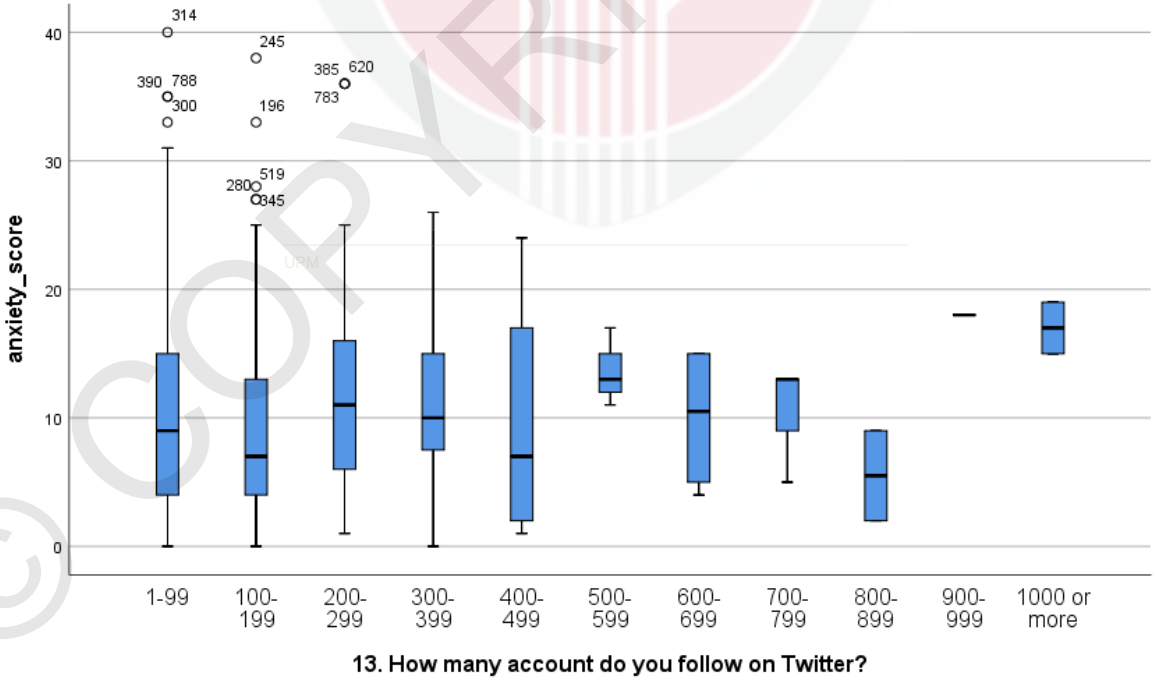

Figure 4.7.3 (j) : Pattern of relationship between number of following on Twitter and Anxiety

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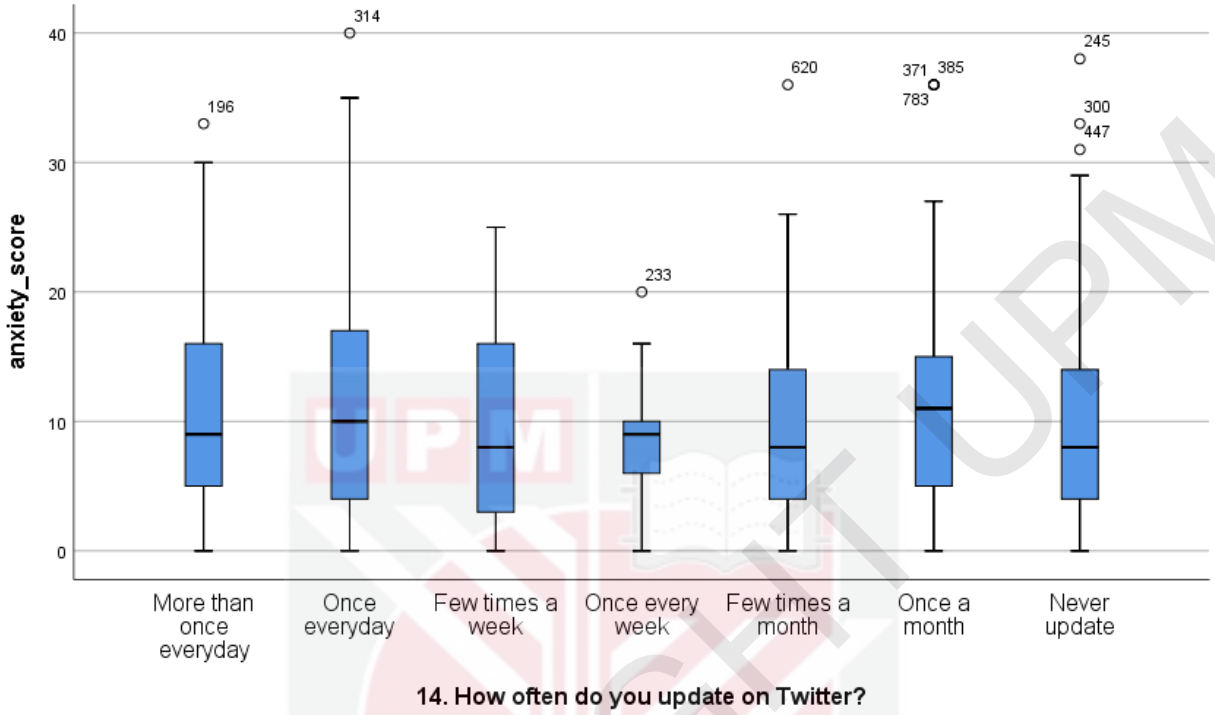

Figure 4.7.3 (k) : Pattern of relationship between frequency of updating on Twitter and Anxiety

			Stress score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.044	-0.001	0.044	-0.112
		Sig. (2-tailed)	.	0.313	0.975	0.316	0.011
		N	879	517	517	517	517

Table 4.7.3 (d): Association between Twitter usage and Stress

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The figures below show the pattern of relationships of Twitter usage variables and stress score among UPM undergraduate students.

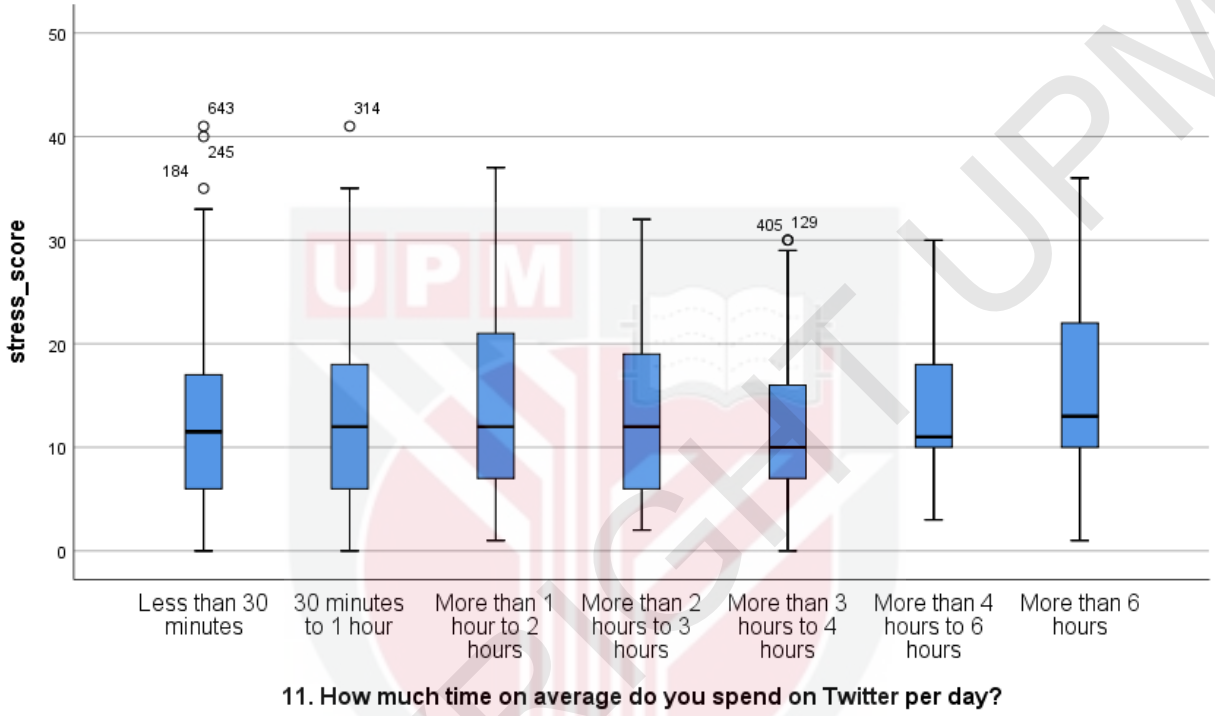

Figure 4.7.3 (l) : Pattern of relationship between daily usage on Twitter and Stress

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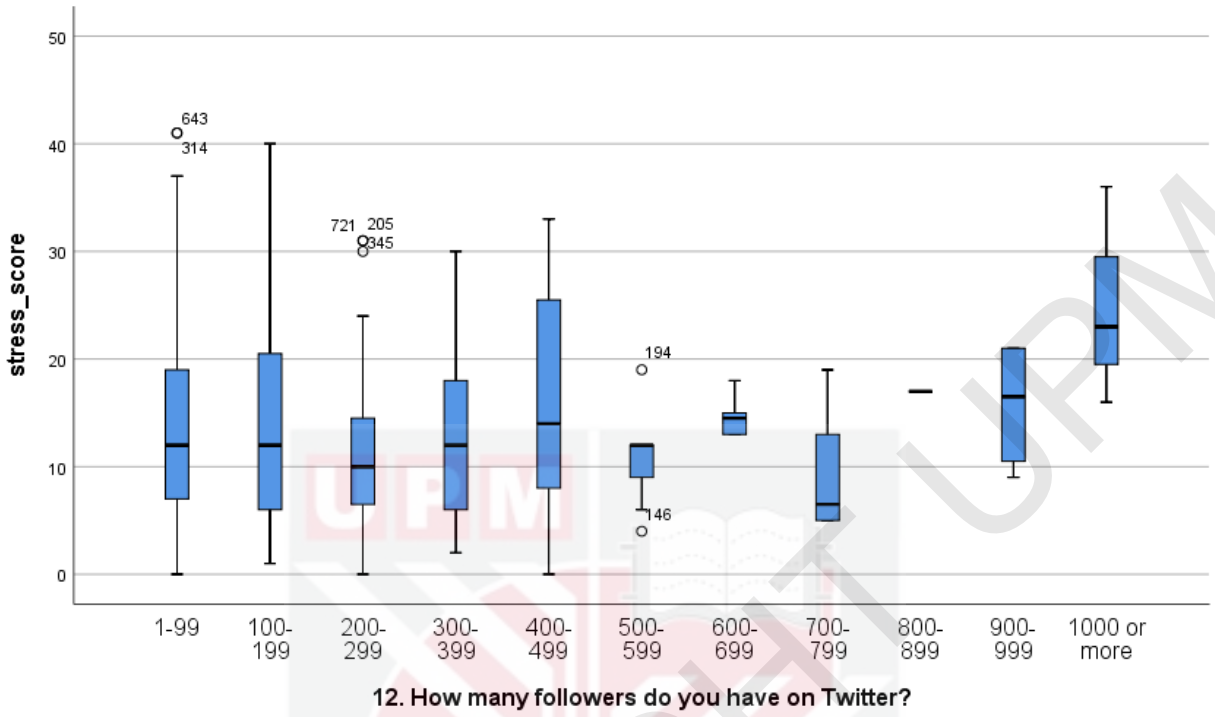

Figure 4.7.3 (m) : Pattern of relationship between number of followers on Twitter and Stress

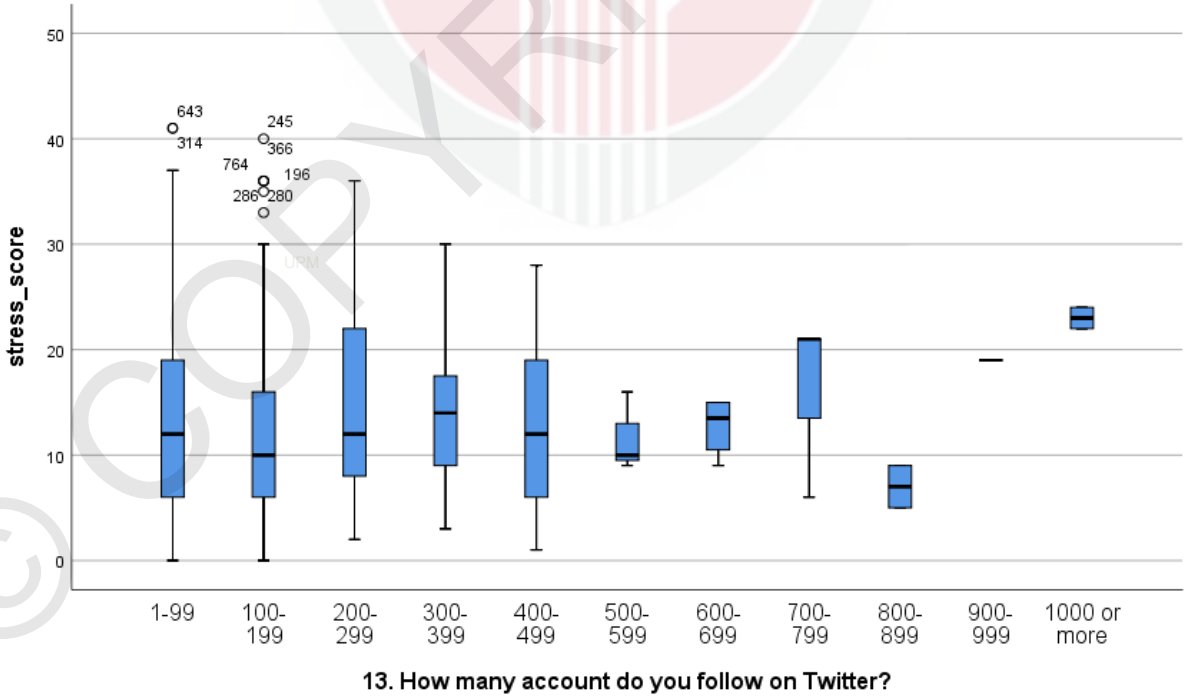

Figure 4.7.3 (n) : Pattern of relationship between number of following on Twitter and Stress

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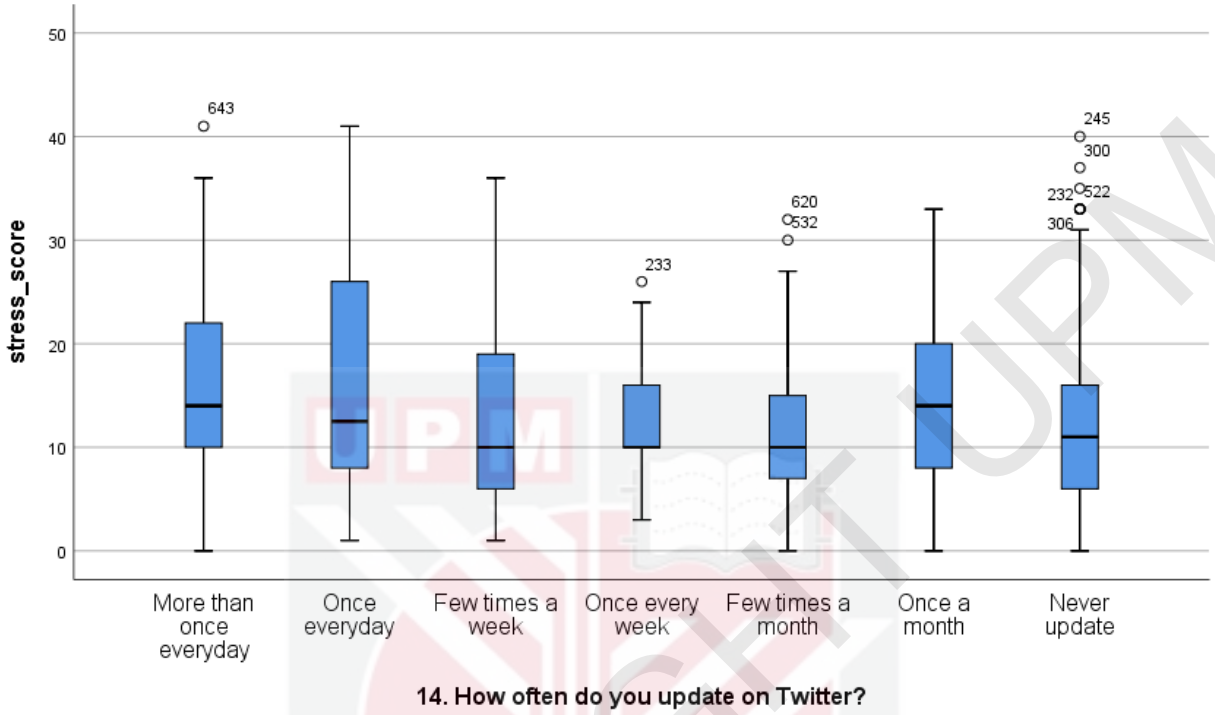

Figure 4.7.3 (o) : Pattern of relationship between frequency of updating on Twitter and Stress

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4.8 Confounder (Gender)

4.8.1 Male - Facebook

Table 4.8.1 (a) shows the result of the Mann-Whitney test to determine the association of Facebook use and mental health among male undergraduate students of UPM. From the test, the p-value is 0.906 ($p>0.05$), hence there is no significant difference between having a Facebook account and mental health issues which is depression among these male undergraduate students. For anxiety disorder, the p-value is 0.861 which is also $p>0.05$. Hence, there is no association between having a Facebook account and anxiety among the male students. Lastly, the p-value for stress score is 0.726 ($p>0.05$). Thus, there is also no significant difference between having a Facebook account and stress among the male students. Shortly, there is no significant association between having a Facebook account and mental health issues among UPM male undergraduate students.

	Depression score	Anxiety score	Stress score
Median	6.00	7.00	10.00
Interquartile range	12	11	9
Mann-Whitney U	1776.000	1762.500	1721.000
Z	-0.118	-0.175	-0.351
Asymp. Sig. (2-tailed)	0.906	0.861	0.726

Table 4.8.1 (a) : Association between having a Facebook account and Mental Health in Male

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Since the data are not normally distributed, Spearman's Correlation is done to determine the correlation between the social media usage and mental health problems among UPM male undergraduate students. The correlation analysis is used to show how strong the variables are related.

There is a positive, weak relationship between daily usage of Facebook and depression among male students. Furthermore, it was not statistically significant (r = 0.088, p = 0.261). Hence, there is no association between daily usage of Facebook and depression. For the number of friends on Facebook and depression among male students, the relationship is negative and weak. There is no statistical significance between these variables (r = -0.149, p = 0.056). The p-value is very close to the borderline so this can be potentially significant but is not because of our sample size. Thus, the borderline significant associations can become significant if we increase the sample size. There is also a negative correlation between number of friends and anxiety level and is statistically not significant (r = -0.148, p= 0.059). Another variable that we would like to check for their relationship is between the time spent to update on Facebook and the mental health level. There was a weak negative relationship between updating Facebook and depression among male students but not statistically significant (r = -0.051, p = 0.516). Similarly, there was a weak negative relationship between time spent to update on Facebook and stress level and was not statistically significant (r = -0.132, p= 0.092).

			Depression score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Depression score	Correlation Coefficient	1.000	0.088	-0.149	-0.051
		Sig. (2-tailed)	.	0.261	**0.056****	0.516
		N	186	164	164	164

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Table 4.8.1 (b): Association between Facebook usage and Depression in Male

			Anxiety score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.030	-0.148	-0.133
		Sig. (2-tailed)	.	0.702	**0.059****	0.089
		N	186	164	164	164

Table 4.8.1 (c): Association between Facebook usage and Anxiety in Male

			Stress score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.042	-0.080	-0.132
		Sig. (2-tailed)	.	0.598	0.311	0.092
		N	186	164	164	164

Table 4.8.1 (d): Association between Facebook usage and Stress in Male

****p-value close to 0.05**

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4.8.2 Male - Instagram

Table 4.8.2 (a) shows the result of the Mann-Whitney test to determine the association of Instagram use and mental health among male undergraduate students of UPM. From the test, the p-value is 0.085 ($p>0.05$), hence there is no significant difference between having an Instagram account and depression among these male undergraduate students. There is also no association between having an Instagram account and anxiety disorder among the male students because the p-value of Mann-Whitney test for this association is 0.896 ($p>0.05$). Lastly for stress, the p-value is 0.859 which is $p>0.05$. Thus, there is no significant difference between having an Instagram account and being stressed among the male students.

	Depression score	Anxiety score	Stress score
Median	6.00	7.00	10.00
Interquartile range	12	11	9
Mann-Whitney U	1072.500	1409.000	1399.000
Z	-1.725	-0.130	-0.178
Asymp. Sig. (2-tailed)	0.085	0.896	0.859

Table 4.8.2 (a) : Association between having an Instagram account and Mental Health in Male

For Spearman Correlation, there is a weak negative correlation between daily usage of Instagram and depression level among male students. However, it is not statistically significant ($r = -0.016$, $p = 0.134$). The same goes with the relationship between daily usage of Instagram and anxiety level among male students where it is negatively correlated but is not statistically significant ($r = -0.030$, $p = 0.699$). Thus, the null hypothesis is rejected. On the other hand, For the number of followers on Instagram, it shows a negative but statistically significant relationship with

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depression (r = -0.204, p = 0.008) and anxiety (r = -0.258, p = 0.001) among male students respectively. This proves that lower number of followers is associated with higher depression and anxiety. Nevertheless, there is a weak negative correlation that is statistically significant between the update on Instagram and stress among male students (r = -0.179, p = 0.020). Hence, there is an association between updating on Instagram and stress level among male students. This relationship explains that although the male respondents update their Instagram seldomly, they are still associated with high level of stress. The same correlation goes to the relationship between accounts being followed on Instagram and anxiety level (r = -0.162, p = 0.035). There is an association between accounts being followed on Instagram and anxiety among male students.

			Depression score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.116	-0.204	-0.124	-0.052
		Sig. (2-tailed)	.	0.134	**0.008**	0.108	0.503
		N	186	169	169	169	169

Table 4.8.2 (b): Association between Instagram usage and Depression in Male

	Anxiety score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram

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Spearman's rho	Anxiety score	Correlation Coefficient	1.000	-0.030	-0.258	-0.162	-0.100
		Sig. (2-tailed)	.	0.699	**0.001**	**0.035**	0.197
		N	186	169	169	169	169

Table 4.8.2 (c): Association between Instagram usage and Anxiety in Male

			Stress score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.011	-0.149	-0.056	-0.179
		Sig. (2-tailed)	.	0.889	**0.053****	0.468	**0.020**
		N	186	169	169	169	169

Table 4.8.2 (d): Association between Instagram usage and Stress in Male

**** p-value close to 0.05**

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4.8.3 Male - Twitter

Table 4.8.3 (a) shows the result of the Mann-Whitney test to determine the association of Instagram use and mental health among male undergraduate students of UPM. From the test, the p-value is 0.051 (p>0.05), hence there is no significant difference between having a Twitter account and mental health issues which is depression among these male undergraduate students. The p-value is very close to the borderline so this can be potentially significant but is not because of our sample size. Thus, the borderline significant associations can become significant if we increase the sample size. For anxiety, the p-value of the test is 0.309 (p>0.05), thus there is no association between having a Twitter account and getting anxious among UPM male undergraduate students. Lastly for stress, the p-value is 0.326 (p>0.05). This shows that there is also no significant difference between having a Twitter account and being stressed among these male students.

	Depression score	Anxiety score	Stress score
Median	6.00	7.00	10.00
Interquartile range	12	11	9
Mann-Whitney U	3478.500	9918.500	9931.500
Z	-1.948	-1.017	-0.981
Asymp. Sig. (2-tailed)	**0.051****	0.309	0.326

Table 4.8.3 (a) : Association between having a Twitter account and Mental Health in Male

The Spearman Correlation is also done to determine the association between Twitter use and mental health problems among UPM male undergraduate students. Daily usage on Twitter is negatively correlated with depression (r =-0.089, p = 0.355), anxiety (r =-0.078, p = 0.417) and

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stress (r = -0.011, p =0.908) respectively. However, all these correlations are not statistically significant. Hence, the null hypothesis is rejected. As for the number of followers on Twitter, there is too weak to zero correlation with depression (r = -0.127, p = 0.187), stress (r= -0.034, p = 0.721) and anxiety (r = -0.169, p = 0.077) level each. All three negative correlations were also not statistically significant. For accounts followed on Twitter, there is a weak, positive relationship with depression level. However, it is not statistically significant (r = 0.095, p = 0.322). This shows that there is no association between the number of accounts followed on Twitter and the depression level among male students. Same goes with the relationship between the number of accounts followed on Twitter and anxiety and stress level among male students. Lastly for the relationship between how often the respondents update on Twitter and depression anxiety, it is weak and negatively correlated and not significant. Nevertheless, there is a significant relationship between updating Twitter and stress level and negatively correlated (r = -0.195, p = 0.041). This shows that there is an association between the variables and visualizes that updating Twitter seldomly may lead to an increase in the stress level among respondents.

			Depression score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.089	-0.127	0.095	-0.066
		Sig. (2-tailed)	.	0.355	0.187	0.322	0.493
		N	186	110	110	110	110

Table 4.8.3 (b) : Association between Twitter usage and Depression in Male

	Anxiety score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter

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Spearman 's rho	Anxiety score	Correlation Coefficient	1.000	-0.078	-0.169	0.047	-0.091
		Sig. (2-tailed)	.	0.417	0.077	0.623	0.344
		N	186	110	110	110	110

Table 4.8.3 (c) : Association between Twitter usage and Anxiety in Male

			Stress score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Stress score	Correlation Coefficient	1.000	-0.011	-0.034	0.113	-0.195
		Sig. (2-tailed)	.	0.908	0.721	0.238	**0.041**
		N	186	110	110	110	110

Table 4.8.3 (d) : Association between Twitter usage and Stress in Male

****p-value close to 0.05**

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4.9.1 Female - Facebook

Table 4.9.1 (a) shows the result of the Mann-Whitney test to determine the association of Facebook use and mental health among female undergraduate students of UPM. From the test, the p-value is 0.180 ($p>0.05$), hence there is no significant difference between having a Facebook account and mental health issues which is depression among these female undergraduate students. For anxiety disorder, the p-value is 0.229 which is also $p>0.05$. Hence, there is no association between having a Facebook account and anxiety among the female students. Lastly, the p-value for stress score is 0.251 ($p>0.05$). Thus, there is also no significant difference between having a Facebook account and stress among the female students. Shortly, there is no significant association between having a Facebook account and mental health issues among UPM female undergraduate students.

	Depression score	Anxiety score	Stress score
Median	8.00	9.00	12.00
Interquartile range	12	9	11
Mann-Whitney U	28570.500	28834.000	28934.500
Z	-1.341	-1.202	-1.148
Asymp. Sig. (2-tailed)	0.180	0.229	0.251

Table 4.9.1 (a) : Association between having a Facebook account and Mental Health in Female

Since the data are not normally distributed, Spearman's Correlation is done to determine the correlation between the social media usage and mental health problems among UPM female undergraduate students. The correlation analysis is used to show how strong the variables are related.

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There is a negative, weak relationship between daily usage of Facebook and depression among female students. Furthermore, it was not statistically significant (r = -0.079, p = 0.055). Hence, there is no association between daily usage of Facebook and depression among female students. The p-value is very close to the borderline so this can be potentially significant but is not because of our sample size. Thus, the borderline significant associations can become significant if we increase the sample size. For the number of friends on Facebook and depression among female students, the relationship is negative and weak. There is statistical significance between these variables (r = -0.149, p = 0.056). The p-value is very close to the borderline so this can be potentially significant but is not because of our sample size. Thus, the borderline significant associations can become significant if we increase the sample size. There is also a negative correlation between the number of friends with anxiety and stress levels and are statistically significant (r = -0.183, p= 0.000)depression and (r = -0.093, p= 0.024)stress respectively. Another variable that we would like to check for their relationship is between the time spent to update on Facebook and the mental health level. There was a weak positive relationship between updating Facebook and depression among female students but not statistically significant (r = 0.067, p = 0.103). On the other hand, there was a weak negative relationship between time spent to update on Facebook and stress level and was not statistically significant (r = -0.005, p= 0.906).

			Depression score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.079	-0.183	0.067
		Sig. (2-tailed)	.	**0.055****	**0.000**	0.103
		N	693	587	587	587

Table 4.9.1 (b): Association between Facebook usage and Depression in Female

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			Anxiety score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.013	-0.093	-0.016
		Sig. (2-tailed)	.	0.754	**0.024**	0.699
		N	693	587	587	587

Table 4.9.1 (c): Association between Facebook usage and Anxiety in Female

			Stress score	Time spent on Facebook per day	Number of friends on Facebook	Update on Facebook
Spearman's rho	Stress score	Correlation Coefficient	1.000	-0.002	-0.080	-0.005
		Sig. (2-tailed)	.	0.966	**0.052****	0.906
		N	693	587	587	587

Table 4.9.1 (d): Association between Facebook usage and Stress in Female

****p-value close to 0.05**

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4.9.2 Female - Instagram

Table 4.9.2 (a) shows the result of the Mann-Whitney test to determine the association of Instagram use and mental health among female undergraduate students of UPM. From the test, the p-value is 0.535 ($p>0.05$), hence there is no significant difference between having an Instagram account and depression among these female undergraduate students. There is also no association between having an Instagram account and anxiety disorder among the female students because the p-value of Mann-Whitney test for this association is 0.784 ($p>0.05$). Lastly for stress, the p-value is 0.756 which is $p>0.05$. Thus, there is no significant difference between having an Instagram account and being stressed among the female students.

	Depression score	Anxiety score	Stress score
Median	8.00	9.00	12.00
Interquartile range	12	9	11
Mann-Whitney U	7740.500	8081.500	8045.000
Z	-0.621	-0.274	-0.311
Asymp. Sig. (2-tailed)	0.535	0.784	0.756

Table 4.9.2 (a) : Association between having an Instagram account and Mental Health in Female

For Spearman Correlation, there is a weak negative correlation between daily usage of Instagram and depression level among female students. However, it is not statistically significant ($r = -0.020$, $p = 0.603$). The relationship between daily usage of Instagram and anxiety level among female students is positively correlated but is not statistically significant ($r = 0.035$, $p = 0.368$). Thus, the null hypothesis is rejected. On the other hand, For the number of followers on Instagram, it shows a negative but statistically significant relationship with depression ($r = -0.127$, $p = 0.001$) among female students respectively. This proves that lower number of

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followers is associated with higher depression. Nevertheless, there is a weak negative correlation that is statistically not significant between the update on Instagram and stress among female students (r = -0.046, p = 0.239). Hence, there is no association between updating on Instagram and stress level among female students. The same correlation goes to the relationship between the update on Instagram and anxiety level (r = -0.019, p = 0.625). There is no association between updates on Instagram and anxiety among female students.

			Depression score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Depression score	Correlation Coefficient	1.000	-0.020	-0.127	-0.066	-0.026
		Sig. (2-tailed)	.	0.603	**0.001**	0.091	0.509
		N	693	668	668	668	668

Table 4.9.2 (b): Association between Instagram usage and Depression in Female

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			Anxiety score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.035	-0.060	-0.019	-0.019
		Sig. (2-tailed)	.	0.368	0.119	0.615	0.625
		N	693	668	668	668	668

Table 4.9.2 (c): Association between Instagram usage and Anxiety in Female

			Stress score	Time spent on Instagram per day	Number of followers on Instagram	Number of following in Instagram	Update on Instagram
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.011	-0.071	-0.054	-0.046
		Sig. (2-tailed)	.	0.784	0.067	0.162	0.239
		N	693	668	668	668	668

Table 4.9.2 (d): Association between Instagram usage and Stress in Female

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4.9.3 Female - Twitter

Table 4.9.3 (a) shows the result of the Mann-Whitney test to determine the association of Twitter use and mental health among female undergraduate students of UPM. From the test, the p-value is 0.009 ($p<0.05$), hence there is significant difference between having a Twitter account and mental health issues which is depression among these female undergraduate students. Thus shows that there is an association between having a twitter account and depression among female students. For anxiety, the p-value of the test is 0.013 ($p<0.05$), thus there is an association between having a Twitter account and getting anxious among UPM female undergraduate students. Lastly for stress, the p-value is 0.001 ($p<0.05$). This shows that there is also a significant difference between having a Twitter account and being stressed among these female students.

	Depression score	Anxiety score	Stress score
Median	8.00	9.00	12.00
Interquartile range	12	9	11
Mann-Whitney U	51418.500	51779.500	49825.500
Z	-2.618	-2.478	-3.231
Asymp. Sig. (2-tailed)	**0.009**	**0.013**	**0.001**

Table 4.9.3 (a) : Association between having a Twitter account and Mental Health in Female

The Spearman Correlation is also done to determine the association between Twitter use and mental health problems among UPM female undergraduate students. Daily usage on Twitter is positively correlated with depression ($r =0.069$, $p = 0.165$), anxiety ($r =0.048$, $p = 0.334$) and stress ($r = 0.041$, $p =0.407$) respectively. However, all these correlations are not statistically significant. Hence, the null hypothesis is rejected. As for the number of followers on Twitter,

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there is too weak to zero correlation with depression (r = -0.068, p = 0.172), stress (r= -0.010, p = 0.845) and anxiety (r = 0.024, p = 0.628) levels each. All three correlations were also not statistically significant. For accounts followed on Twitter, there is a weak, positive relationship with depression level. However, it is not statistically significant (r =0.015, p = 0.760). This shows that there is no association between the number of accounts followed on Twitter and the depression level among female students. Same goes with the relationship between the number of accounts followed on Twitter and anxiety level among female students. Lastly for the relationship between how often the female respondents update on Twitter and stress level, it is weak and negatively correlated and significant (r = -0.098, p = 0.048). This shows that there is an association between the variables and visualizes that updating Twitter seldomly may lead to an increase in the stress level among female respondents.

			Depression score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Depression score	Correlation Coefficient	1.000	0.069	-0.068	0.015	-0.077
		Sig. (2-tailed)	.	0.165	0.172	0.760	0.122
		N	693	407	407	407	407

Table 4.9.3 (b) : Association between Twitter usage and Depression in Female

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			Anxiety score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Anxiety score	Correlation Coefficient	1.000	0.048	0.024	0.033	-0.021
		Sig. (2-tailed)	.	0.334	0.628	0.506	0.677
		N	693	407	407	407	407

Table 4.9.3 (c) : Association between Twitter usage and Anxiety in Female

			Stress score	Time spent on Twitter per day	Number of followers on Twitter	Number of following in Twitter	Update on Twitter
Spearman's rho	Stress score	Correlation Coefficient	1.000	0.041	-0.010	-0.007	-0.098
		Sig. (2-tailed)	.	0.407	0.845	0.888	**0.048**
		N	693	407	407	407	407

Table 4.9.3 (d) : Association between Twitter usage and Stress in Female

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CHAPTER 5 - DISCUSSION

5.1 Introduction

This study was conducted to determine the association between social media usage and mental health among undergraduate students in Universiti Putra Malaysia (UPM). It was carried out from Disember 2020 to May 2021. Currently, there are not much studies regarding association between social media usage and depression, anxiety and stress is done specifically among undergraduate students which have attempted to research the association of these aspects of mental health with social media usage and relevant sociodemographic factors. Hence, this study would be essential to determine whether there is an association among these factors. The outcome of this study would help us understand the factors that affect mental health and what can be done to overcome this issue in the future.

5.2 Social Media Usage

Snapchat, Instagram, Facebook, YouTube, and Twitter are reported as the most prominent social media platforms among teenagers nowadays. More than 40% of teenage girls and more than 20% of teenage boys report using social media for 3 or more hours a day (Mir, Novas & Seymour, National Center for Health Research, 2020). Based on their report as well, the percentage of 18 to 24 year olds using Facebook was 80%, followed by Instagram at 71%, and lastly for Twitter at 45%. Comparatively to our study, the recorded percentage of respondents consisting of undergraduate students with a Facebook account was 85.4% which is almost equally as high as the previous report. Among them, most of them did not use Facebook for more than 30 minutes on a daily basis (59.4%).

Next up based on our research, Instagram showed more significant results at 95.2% of respondents having an Instagram account and among them, most of them used Instagram for 30 minutes to 1 hour on a daily basis at 27.2%. Most of them only update once a month along with their Instagram usage. These results can be said to be similar to the report by Mir, Novas and Seymour, 2020 with an overall active usage by respondents.

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Last but not least, the report by Mir, Novas and Seymour, 2020 recorded a percentage of 45% for young adults aged 18 to 24 using Twitter. Relatively, based on results of our data analysis 58.8% of our respondents have a Twitter account and although most of them have an account they use Twitter less than 30 minutes only on a daily basis. The percentage is at 16.2% roughly around the percentage shown by the previously mentioned report.

Hence, Instagram is more likely to be used compared to Facebook and Twitter based on results we obtained. This indirectly relates to the popularity of Instagram, along with the ease of usage of Instagram among undergraduate students in UPM at this current period of pandemic especially. We can also claim that Facebook is rarely being used compared to a few years ago when it was among the teenagers favorite and on the other hand Twitter usage is rising with its different approach as a social media platform and as of today Instagram is most used among adolescents and young adults, specifically undergraduate students in UPM. This is slightly contradicting with results from Mir, Novas and Seymour's report as well as Pantic et. al 2014, as they state that Facebook is most widely used worldwide compared to other social media sites.

As a summary, our results showed the majority of the respondents having an account on each of the 3 social media platforms; Facebook, Instagram and Twitter, however their active usage varies from one to another. These results may be supported by a study on "Adolescent social media use and mental health from adolescent and parent perspectives". Adolescent participants were generally active on social media in 82.1% of them reported having had social media accounts for at least one year, and 92.9% reported having at least one social media account (Barry, Sidoti, Briggs et. al, 2017)

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5.3 Prevalence of Mental Health

Our objective is to determine the prevalence of mental health too other than the prevalence of social media. For prevalence of depression, the results showed that the prevalence of depression among undergraduate students in University Putra Malaysia is 42.3%. 372 undergraduate students in University Putra Malaysia out of 879 respondents have depression. Since our research specifically targets undergraduate students, the prevalence of depression is higher than the prevalence of current depression in Malaysia which was 1.8% based on the Malaysia Mental Healthcare Performance Report (2016). This is a very important thing to highlight because it clearly shows that undergraduate students are the prominent group going through depression in this current situation. This, in turn, will definitely raise their risk of depression at a later stage in their career life. Besides, high prevalence of depression among undergraduate students in UPM who are also young people might be rendered to uncontrollable negative feeling, negative life events and any family - associated stressful event according to (Awuni & Mbinta, 2020).Based on (Bakshi et al., 2017), people who use DAS 21 in their study, depression was prevalent in respondents who belong to poor families, thus poverty can be one of the causative factors that contribute to depression. Thus to avoid or lessen any direct or indirect physical and emotional effect due to depression, many beneficial psychological health programs such as forums, online anonymous confession and personal counselling should be integrated with universities or college curriculum .

For anxiety, the results showed that the prevalence of anxiety among University Putra Malaysia is 55.9%. 491 University Putra Malaysia undergraduate students from those 879 respondents who participated were anxious while the rest of 388 undergraduate students were normal and mentally healthy. This is quite worrying as there might be abundant reasons that cause anxiety among young adults such as decreased parental love, lack of parental affection takes toll on mental peace of children. Furthermore, anxiety might worsen when they grow up if they are unable to overcome it. The prevalence of anxiety among UPM undergraduate students is a little bit higher compared to the local prevalence of anxiety among adults in the community which was 8.2 % in 2015 (Kader Maideen, Mohd Sidik, Rampal, et. al, 2015). In previous research, a total of 119 participants out of 1455 had anxiety in this study (Kader Maideen, Mohd Sidik, Rampal, et. al 2015).According to (Karim et al., 2020),prolonged use of social media

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platforms such as Facebook may be related to anxiety as social media can create a lot of pressure on stereotype that others want to see and also being as popular as others.The prevalence of anxiety increases as the parents love decreases, lack of parental affection based on (Bakshi et al., 2017).

Meanwhile as for stress level, the results we obtained showed that the prevalence of stress among University Putra Malaysia undergraduate students is 34.8%. 306 out of all 879 undergraduate students in University Putra Malaysia who participated were stressed. The prevalence of stress among undergraduate students in UPM (34.8%) was higher compared with previous research done by other university undergraduate students. The prevalence of stress is high because undergraduate students in particular face various stressors such as unrealistic academic requirements and expectation as well as demands of parents and teacher, time pressure and social adjustments, and may face few additional challenges for example large workload, the time commitment and the number of assessments, as well as the pressures during this pandemic. All these will eventually sum up that undergraduate students basically have a very stressful and hectic routine that puts them under a lot of pressure that brings about this stress condition in them. Based on (Bakshi et al., 2017) ,academic stress is recognized as a risk factor that put student on depression and ultimately suicidal behavior.Therefore ,it is essential to determine stressors that undergraduate students facing to avoid further complication from stress issues as some stress might associated with post covid-19.

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5.4 Association between Sociodemographic Factors and Mental Health

In this study, there is no association between age and mental health issues including depression, anxiety and stress (p=0.491, p=0.073, p=0.018) respectively. Depression, anxiety and stress level were reported to be highest among the age of 20 years old. This could be due to the undergraduate students slowly adapting and adjusting to the era of university life. As they are all new to the whole new system compared to their high school and pre-U, this could have caused some pressure on themselves to adapt to the new norm. According to the American College Health Association's (ACHA-NCHA) 2008 National College Health Assessment, nearly one-third of undergraduates reported "feeling so depressed and it was difficult to function" at least once in the previous year, and nearly one-tenth reported "seriously considering suicide" in the previous year. This clearly shows that not just UPM undergraduate students but even undergraduates in America also go through very similar mental issues and in severe cases they even go on to have suicidal ideations.

As for gender, there is an association between gender and mental health issues. Depression, anxiety and stress level were found to be highest in females. Similar to a previous study, Dreger et. al, 2014 reported that women are associated with higher poor positive mental health which is 30% compared to men at 24%. This could give us an idea that females among undergraduate students in UPM are having a tougher time handling their troubles and issues or perhaps there must be something bothering them internally or externally. A study done by Ohannessian CM, Lerner RM, von Eye A, Lerner JV also supports that adolescent girls have been found to be significantly more likely to experience low and moderate levels of depression and anxiety than adolescent boys.

In terms of ethnicity, there is no association between ethnicity and depression, anxiety and stress as the p-value is more than 0.05. The Malays held the highest frequency and percentage of being depressed, anxious and stressed. This correlates with many of the previous studies mentioned before, Shamsudin et. al, 2013 found that Malay students had the highest stress score as compared to Chinese and Indian. It also shows similar findings to a study that was done by Gin-Gin Gan and Yuen-Ling Hue in 2019 which suggested that Malay students had significantly more anxiety compared to other ethnic groups. They also mentioned that anxiety

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142 and depression were associated with significantly poorer quality of life (QOL). Probably the same scenario is happening among UPM Malay undergraduates as they are the majority indulged in these mental health issues and there must be a significant reason or situation faced by them.

Moreover, as for year of study, there is no association between year of study and having mental health issues. Depression and stress level were highest among Year 4 undergraduate students meanwhile anxiety level was highest among Year 1 undergraduate students. The year 4 undergraduate students could develop depression and stress as they are coping to the pandemic world together with their online studies and final year projects, and as for the year 1 undergraduate students could be 138 stressed as they were facing their new phase of life during this period of time. It could have been difficult for them to comprehend the real situation of a university student.

There is no association between household income and mental health problems as the p-value is more than 0.05. Generally, students coming from financially stable backgrounds suffer less depression than those who are not fortunate. Our findings are supported by a research conducted by Gin-Gin Gan and Yuen-Ling Hue in 2019 which suggested that students from better financial backgrounds reported better environmental scores. In simple meaning, students from financially stable families are shown to be less likely to suffer depression compared to those who are not. This is because as students, there will surely be so many external expenses and also our daily expenses, some students have to work part time or overtime just to spend on a daily basis. This circumstance alone could add unbearable pressure on the students' life and eventually affect their mental health.

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5.5 Association between Social Media Usage and Mental Health

For association between social media usage and mental health, we focused on main social media platforms which include Facebook, Instagram and Twitter. Few aspects were taken in consideration which were asked in the questionnaire provided to the undergraduate students. For Facebook, we have found that there is no association in having a Facebook account and mental health issues which is anxiety as p value is more than 0.05 as p value is 0.255. For possessing an Instagram account, the p value is 0.681 which is more than 0.05, so it showed no association between possseing Instagram account with anxiety. P value for Twitter account was more than 0.05 which is 0.118, so it showed no association between owing Twitter account and anxiety. In short, apparently, possessing social media accounts did not influence the anxiety level of undergraduate students. This could possibly mean that undergraduate students are not feeling anxious regardless if they own or do not own any social media accounts. This gives an idea or assumption that probably students nowadays spend their time more on other things rather than owning a social media account and being engaged in it.

P value for average time spent on Facebook and Twitter per day is more than 0.05 showed no association between average time spent with anxiety. This contradicts with the study done by Pantic et. al. in 2012, they found a significant positive correlation between depressive symptoms and time spent on social networking sites (SNS). The longer the hours they spend on their social media might cause them to see posts that may affect them emotionally or lessen their interaction with the real world hence causing these mental health issues. But in our case, it is most probably that undergraduate students of UPM do not seem to be very much disturbed with the content they see daily on Facebook and Twitter so perhaps that is why they do not seem to have an association between anxiety and the time spent on those platforms. However, there is association between average time spent on IG with stress as p value (0.023) was less than 0.05. Our study result is similar to the results studied by Jiang and Ngien, 2020 which revealed Instagram use will have an indirect impact on social anxiety via social comparison. Undergraduate students will tend to compare their lives with the people on social media and some even do this unknowingly because that is the pressure that can be built by the frequent usage of social media which causes them to be so obsessed with the content they see daily.

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Number of friends on Facebook, numbers of followers and following on Instagram and Twitter has no association with anxiety as p value is less than 0.05. This contradicts with the finding with a study that was published by Park et. al 2013, that concluded a depressed Facebook user has characteristics such as fewer friends and location tagging. Facebook users with a lesser number of followers could also mean they have fewer people to interact with, thus leading to these depressive symptoms. But in our setting most probably the undergraduate students show no association between number of friends and followers on social media with mental health issues because they do not seem to have a problem interacting with the people close to them or we can say that their loved ones stay close with them. This gives them an opportunity not to struggle trying to contact their loved ones through social media platforms.

Average time spent on Twitter per day was more than 0.05 which is 0.464, so no association between average time spent on Twitter per day and anxiety. Unlike other social media, twitter is basically an emotion based social media. Through twitter, its users express their feelings, thoughts and opinions. Increase in updating a twitter post shows that the person is sharing his or her feelings in social networking rather than sharing it in a face to face communication. Next, there is an association between frequency update in Instagram per day and stress which is 0.036 due to undergraduate students tend to intensely compare among themselves which can lead to severe stress that could overwhelm them. It is consistent with research done by Davila, Joanne, et. al 2012. In this research, the authors found that an increase in the frequency of social media use caused an increase in frequency of positive and negative feelings which is likely to contribute to worse mental health outcomes. Moreover, according to Kross, Ethan, et. al 2013, more frequent social media use caused its users to experience more negative effects and reduced life satisfaction and frequent experience of negative effects may contribute to the onset of depression.

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Next is for the number of followers the respondents have on twitter. The results obtained showed that there is no association between the number of followers the respondents have on twitter with depression anxiety and stress since the p values for depression, anxiety and stress are all more than 0.05. It is ubiquitous for adolescents to compare the number of followers they have with their peers which is probably an aspect which contributes to mental health issues. The result is inconsistent with research done by Seabrook Kern and Rickard in 2016 which found that negative communication and social comparisons on social media were connected to higher levels of depression and anxiety. Besides, the more followers you have, the more you are thinking about what you will post since you have more followers who are going to see it. In our setting, probably undergraduate students of UPM do not seem to bother much about their viewers or the outcomes of their posts on social media. This proves the findings we have got showing that there is no association between the number of followers on twitter with depression, anxiety and stress.

Next is the frequency of updating a post on their twitter account. The results showed that there is no association between frequency of updating a post on their social media and depression, anxiety and stress as the Mann Whitney test showed the p values more than 0.05 for all three dependent Mann Whitney and spearman variables. This was consistent with findings from Neira et. al 2014, which found a significant association between frequency of social network use and depression. However, the results obtained showed that the level of depression, anxiety and stress are seen highest among those who do not frequently update a post on their twitter. The results obtained show that there is an association between frequency of updating and depression, anxiety and stress. It is consistent with research done by Davila, Joanne, et. al 2012. In this research, the authors found that an increase in the frequency of social media use caused an increase in frequency of positive and negative feelings which is likely to lead to worse mental health outcomes and impact daily life qualities.

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Lastly, as to how often they update their Facebook account, it was revealed that the p-value is less than 0.05 for depression, anxiety and stress. Hence, there is an association between how often they update on their Facebook account and their mental health. According to the authors of a report #StatusOfMind, published by the Royal Society for Public Health, "Using social media for more than two hours per day has also been independently associated with poor self rating of mental health, increased levels of psychological distress and suicidal ideation"(Firestone,2017). Not only that, this also adds on to the fact to those students who have quite a big number of following. With a greater number of followers on Instagram, young adults are capable of comparing themselves and their lifestyles with those they see online. Prior research indicated that social comparison could make people feel socially anxious. Social comparison consists of people's 105 biological inclinations to evaluate their situation, skill, and overall identity in comparison to others, based on the information they receive about others (Festinger, 1954). In short, the number of friends and stress are closely interrelated. This finding is alarming as it indicates friends play an important role in undergraduate students in UPM daily life and this might suggest increased risk for psychiatric morbidity and affect physiological health. This reflects that it is necessary for students to be in their better psychological health to achieve success and harbour a brighter as well as better future (Ranita Manap et al., 2019).

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CHAPTER 6 - CONCLUSION

6.1 Conclusion

In conclusion, out of 864 sample sizes calculated which included first to fifth year undergraduate students of Universiti Putra Malaysia, 879 respondents participated in this research, hence giving a response rate of 101%. From this research, we found that the most used social media was Instagram with 95.2% of respondents having an Instagram account followed by Facebook (85.4%) and Twitter (58.8%). Next, among depression, anxiety and stress, we found that prevalence of anxiety among UPM undergraduate students was the highest with a percentage of 55.9% compared to depression (42.3%) and stress (34.8%). Moving on to sociodemographic factors, there was no association between age and mental health. For gender, there was an association and significant difference between gender and mental health problems among these undergraduate students. It was proven when all odds ratios for depression, anxiety and stress show a higher risk in females than in males. For the monthly household income and ethnicity, there was no association between both of it and mental health. There was also no association between the year of study and anxiety, depression and stress among UPM undergraduate students. However, there was an association between faculty of study and mental health problems which were depression and anxiety among undergraduate students of UPM. Faculty Design and Architecture had marked a higher percentage of respondents having depression compared to other faculties. Meanwhile Faculty Veterinary Medicine also resulted in the highest prevalence of anxiety among their respondents, proving that there was an association between types of faculty of study and mental health problems among the students. In addition, from this study, we have found that there was an association between social media; Facebook, Instagram and Twitter usage and mental health issues among undergraduate students of UPM. Factors such as daily usage of each social media, number of followers they have, number of accounts they are following, and frequency of updating a post on their account could contribute to their depression, anxiety and stress level.

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6.2 Recommendations

The study that was conducted only involved undergraduate students in University Putra Malaysia. For future studies, we would like to recommend to involve undergraduate students from other universities such as University Malaya (UM) and Universiti Kebangsaan Malaysia (UKM) .This is due to the reason of this will allow an increase in the number of respondents .Thus , we can determine association between social media usage and mental health not only for undergraduate students in University Putra Malaysia but for other undergraduate students from other universities too.

Due to the limitations of questionnaires that were distributed online during pandemic Covid-19 and time constraints that are apparent in our study, we would like to recommend future researchers to find a way to make the process of participation easier for respondents that wish to participate in this study. May that be by a different approach, perhaps meeting undergraduate students in UPM, our respondents, in person, providing enough information and conducting the questionnaires on the spot. We would also like to strongly recommend future researchers to carry out a cohort study in the future to investigate the temporal relationship and direction of the variables in depth since our current study does not show whether high social media usage causes mental health issues or vice versa.Furthermore, regarding social media usage, in order to try to curb mental illnesses emerging from one's social media usage, mindfulness of screentime, social media detox, proper counselling, support groups and even just good communication with people who care for you are some good recommendations. As most of us know, in life everything should be done in moderation and there is always light at the end of the tunnel no matter what.

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6.3 Limitations

In this study, we have had a few limitations which resulted in a lower response rate than expected with our sample size. Mainly, we were set back by non-response bias, as our questionnaire was distributed online, mainly due to the Covid-19 pandemic where social distancing is very important to continue being practised, so we could not meet any of the respondents in person and the respondent also might have been unable to participate or answer the questionnaire due to many reasons. For example, many of them experienced poor connectivity of the internet, this might have caused them not to receive the correct link or missed it through the forwarding of messages. Most of the final year students in almost every faculty were busy with their own research and projects, nevertheless most of them managed to participate. Some students were also extremely busy and exhausted with their routine schedule and classes which had been delayed and complicated due to the pandemic as well. Nevertheless, many students managed to allocate some time and participate as respondents once their exams or projects were over.

Furthermore, the questionnaires that we used for undergraduate students were self-reported, in which they had to be filled out by the students themselves, without any supervision from any of the researchers. This may cause information bias, particularly self- reporting bias, that may affect the validity of the data obtained. For example, some respondents may not reveal that they are going through certain challenges that could predispose to depression, thus answering the questionnaires in a different manner. Some may also take it very lightly or we could say simply answering them without taking it in a serious manner. All these limitations made our results a little difficult to interpret as we are looking at the undergraduate students as a whole but we still managed to rule out some of the misunderstandings or errors that we encountered during the data collection.

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APPENDICES

APPENDIX A - WORK PLAN

Gantt Chart

	Dec	Jan	Feb	Mar	Apr	May	June	July
Proposal Presentation								
Submission of proposal								
Proposal Presentation								
Submission of proposal for ethical approval								
Data collection and analysis								
Presentation of analyzed data								
Report writing								
Poster presentation								
Final Presentation								
Submission of Log book								

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APPENDIX B - QUESTIONNAIRE

PART 1 - Consent Form

Answering questionnaires is voluntary participation and respondents are allowed to withdraw at any point of time without restrictions. However, no compensation is available. Kindly note that completing the survey takes no longer than 15 minutes. The data will be collected and analyzed for this particular study. Please answer the following:

Email address (Student UPM email)

_____

Do you voluntarily agree to participate in this study stated above?
[ ] Yes
[ ] No

Are you currently an undergraduate student in Universiti Putra Malaysia? 2020/2021
[ ] Yes
[ ] No

PART 2- DASS-42

Please read each statement and circle a number 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.

The rating scale is as follows:

0 Did not apply to me at all - NEVER

1 Applied to me to some degree, or some of the time - SOMETIMES

2 Applied to me to a considerable degree, or a good part of time - OFTEN

3 Applied to me very much or most of the time - ALMOST ALWAYS

Sila baca setiap kenyataan di bawah dan bulat kan pada nombor 0, 1, 2 atau 3 bagi menggambarkan keadaan anda sepanjang minggu yang lalu. Tiada jawapan yang betul atau salah. Jangan mengambil masa yang terlalu lama untuk menjawab mana-mana kenyataan.

Skala pemarkahan adalah seperti berikut:

0 TIDAK LANGSUNG menggambarkan keadaan saya

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1 SEDIKIT ATAU JARANG-JARANG menggambarkan keadaan saya.

2 BANYAK ATAU KERAP KALI menggambarkan keadaan saya.

3 SANGAT BANYAK ATAU SANGAT KERAP menggambarkan keadaan saya.

		0	1	2	3
1	I found myself getting upset by quite trivial things *Saya dapati diri saya menjadi kesal/marah disebabkan perkara-perkara yang kecil.*				
2	I was aware of dryness of my mouth *Saya sedar mulut saya terasa kering*				
3	I couldn't seem to experience any positive feeling at all *Saya tidak dapat mengalami perasaan positif sama sekali*				
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion) *Saya mengalami kesukaran bernafas (contohnya pernafasan yang laju, tercungap-cungap walaupun tidak melakukan senaman fizikal)*				
5	I just couldn't seem to get going *Saya rasa diri saya tidak bergerak ke mana-mana*				
6	I tended to over-react to situations *Saya cenderung untuk bertindak keterlaluan dalam sesuatu keadaan*				
7	I had a feeling of shakiness (eg, legs going to give way) *Saya mempunyai perasaan gementar (seperti kaki menjadi lemah)*				
8	I found it difficult to relax *Saya rasa sukar untuk relaks*				
9	I found myself in situations that made me so anxious I was most relieved when they ended *Saya dapati diri saya di dalam keadaan yang menjadikan saya amat*				

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	risau dan menjadi tenang semula selepas ianya berakhir				
10	I felt that I had nothing to look forward to *Saya rasa saya tidak mempunyai apa-apa untuk diharapkan*				
11	I found myself getting upset rather easily *Saya dapati diri saya mudah merasa kesal*				
12	I felt that I was using a lot of nervous energy *Saya rasa saya menggunakan banyak tenaga dalam keadaan cemas*				
13	I felt sad and depressed *Saya rasa sedih dan murung*				
14	I found myself getting impatient when I was delayed in any way (eg, elevators, traffic lights, being kept waiting) *Saya dapati diri saya hilang kesabaran sekiranya saya di lambatkan oleh sesuatu (seperti lif, lampu trafik, terpaksa lama menunggu)*				
15	I had a feeling of faintness *Saya rasa macam nak pengsan*				
16	I felt that I had lost interest in just about everything *Saya rasa saya hilang minat dalam segala hal*				
17	I felt I wasn't worth much as a person *Saya tidak begitu berharga sebagai seorang individu*				
18	I felt that I was rather touchy *Saya rasa yang saya mudah tersentuh*				
19	I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion *Saya banyak berpeluh (contohnya pada tangan) walaupun bukan pada suhu tinggi atau tiada pergerakan fizikal.*				
20	I felt scared without any good reason				

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	Saya berasa takut tanpa sebab yang munasabah				
21	I felt that life wasn't worthwhile *Saya rasa hidup ini sudah tidak bermakna lagi*				
22	I found it hard to wind down *Saya dapati diri saya sukar ditenteramkan*				
23	I had difficulty in swallowing *Saya rasa sukar menelan*				
24	I couldn't seem to get any enjoyment out of the things I did *Saya tidak dapat merasakan keseronokan dalam apa yang saya lakukan*				
25	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat) *Saya sedar tindak balas jantung saya walaupun tidak melakukan aktiviti fizikal (contohnya kadar denyutan jantung bertambah, atau denyutan jantung berkurangan)*				
26	I felt down-hearted and blue *Saya rasa duka dan tidak keruan*				
27	I found that I was very irritable *Saya dapati diri saya mudah marah*				
28	I felt I was close to panic *Saya rasa hampir-hampir menjadi panik/cemas*				
29	I found it hard to calm down after something upset me *Saya dapati sukar untuk bertenang setelah sesuatu membuatkan saya kesal*				
30	I feared that I would be "thrown" by some trivial but unfamiliar task *Saya risau saya akan 'dihambat' oleh tugas yang remeh dan tidak biasa dilakukan*				
31	I was unable to become enthusiastic about anything				

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	Saya tidak bersemangat dengan apa jua yang saya lakukan				
32	I found it difficult to tolerate interruptions to what I was doing *Saya sukar bersabar pada gangguan terhadap perkara yang sedang saya lakukan*				
33	I was in a state of nervous tension *Saya di dalam keadaan yang terlalu gementar*				
34	I felt I was pretty worthless *Saya rasa diri saya langsung tidak berharga*				
35	I was intolerant of anything that kept me from getting on with what I was doing *Saya hilang pertimbangan pada perkara yang menghalang saya meneruskan apa yang saya lakukan*				
36	I felt terrified *Saya rasa amat takut*				
37	I could see nothing in the future to be hopeful about *Saya melihat tiada masa depan untuk saya menaruh harapan*				
38	I felt that life was meaningless *Saya rasa hidup ini tidak bermakna*				
39	I found myself getting agitated *Saya dapati diri saya semakin gelisah*				
40	I was worried about situations in which I might panic and make a fool of myself *Saya bimbang keadaan di mana saya mungkin menjadi panik dan melakukan perkara yang membodohkan diri sendiri*				
41	I experienced trembling (eg, in the hands) *Saya rasa menggeletar (contohnya pada tangan)*				

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42	I found it difficult to work up the initiative to do things *Saya sukar untuk mendapatkan semangat bagi melakukan sesuatu perkara*				

PART 3- SOCIAL MEDIA USE
Please answer ALL the questions below or place a tick (/) in the box which best describes you.

Do you have a Facebook account?

[ ] Yes
[ ] No

Do you have an Instagram account?

[ ] Yes
[ ] No

Do you have a Twitter account?

[ ] Yes
[ ] No

FACEBOOK USAGE

How much time on average do you spend on Facebook per day?

[ ] Less than 30 minutes
[ ] 30 minutes to 1 hour
[ ] More than 1 hour to 2 hours
[ ] More than 2 hours to 3 hours
[ ] More than 3 hours to 4 hours
[ ] More than 4 hours to 6 hours
[ ] More than 6 hours

How many friends do you have on Facebook?

[ ] 1-99
[ ] 100-199
[ ] 200-299
[ ] 300-399
[ ] 400-499
[ ] 500-599
[ ] 600-699

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[ ] 700-799
[ ] 800-899
[ ] 900-999
[ ] 1000 or more

How often do you update on Facebook?

[ ] More than once everyday
[ ] Once everyday
[ ] Few times a week
[ ] Once every week
[ ] Few times a month
[ ] Once a month
[ ] Never update

INSTAGRAM USAGE

How much time on average do you spend on Instagram per day?

[ ] Less than 30 minutes
[ ] 30 minutes to 1 hour
[ ] More than 1 hour to 2 hours
[ ] More than 2 hours to 3 hours
[ ] More than 3 hours to 4 hours
[ ] More than 4 hours to 6 hours
[ ] More than 6 hours

How many followers do you have on Instagram?

[ ] 1-99
[ ] 100-199
[ ] 200-299
[ ] 300-399
[ ] 400-499
[ ] 500-599
[ ] 600-699
[ ] 700-799
[ ] 800-899
[ ] 900-999
[ ] 1000 or more

How many friends are you following on Instagram?

[ ] 1-99
[ ] 100-199

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[ ] 200-299
[ ] 300-399
[ ] 400-499
[ ] 500-599
[ ] 600-699
[ ] 700-799
[ ] 800-899
[ ] 900-999
[ ] 1000 or more

How often do you update on Instagram?

[ ] More than once everyday
[ ] Once everyday
[ ] Few times a week
[ ] Once every week
[ ] Few times a month
[ ] Once a month
[ ] Never update

TWITTER USAGE

How much time on average do you spend on Twitter per day?

[ ] Less than 30 minutes
[ ] 30 minutes to 1 hour
[ ] More than 1 hour to 2 hours
[ ] More than 2 hours to 3 hours
[ ] More than 3 hours to 4 hours
[ ] More than 4 hours to 6 hours
[ ] More than 6 hours

How many followers do you have on Twitter?

[ ] 1-99
[ ] 100-199
[ ] 200-299
[ ] 300-399
[ ] 400-499
[ ] 500-599
[ ] 600-699
[ ] 700-799
[ ] 800-899
[ ] 900-999
[ ] 1000 or more

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How many friends are you following on Twitter?

[ ] 1-99
[ ] 100-199
[ ] 200-299
[ ] 300-399
[ ] 400-499
[ ] 500-599
[ ] 600-699
[ ] 700-799
[ ] 800-899
[ ] 900-999
[ ] 1000 or more

How often do you update on Twitter?

[ ] More than once everyday
[ ] Once everyday
[ ] Few times a week
[ ] Once every week
[ ] Few times a month
[ ] Once a month
[ ] Never update

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PART 4- PERSONAL INFORMATION
Please answer ALL the questions below or place a tick (/) in the box which best describes you.

Age
_____

Gender
[ ] Female
[ ] Male

Ethnicity
[ ] Malay
[ ] Indian
[ ] Chinese
[ ] Other : _____

Monthly Household Income
[ ] B40 (<RM4,360)
[ ] M40 (>RM4,360 - RM9,619)
[ ] T20 (>RM9,619)

Faculty of Study
_____

Year of Study
[ ] Year 1
[ ] Year 2
[ ] Year 3
[ ] Year 4
[ ] Year 5

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PART 5- MEDICAL HELP

Please place a tick (/) in the box which best describes you.

Would you like to receive any medical help regarding your mental health condition?

[ ] Yes
[ ] No

If yes, we would like to advise you to immediately speak about this issue to your parents, guardian or anyone you trusted.

Below is also listed down available mental health helplines in Malaysia that are still in service and willing to help people who are in need. Feel free to contact one of these agencies and gain a healthier mental health afterwards :

- Bahagian Kaunseling UPM (+603-97692082)
- Befrienders Malaysia Kuala Lumpur (+603-79568145)
- Life Line Association Malaysia (+603-42657995)
- Women's Aid Organization (WAO) (+603-79563488)

STEPS TAKEN TO DELIVER MEDICAL HELP TO HIGH RISK RESPONDENTS

First of all, before aiding the students with medical help, we will identify the respondents who seem to be in one of the categories of depression, anxiety or stress according to the DASS-42 score assessment. The severe and very severe category students might be the one who will be needing immediate help. We will provide a space in the questionnaire to ask the respondents if they would seek help if there is a choice given to them. And then, we will start by advising the students that it is best if the students can start seeking help or aid themselves with appropriate help regarding this issue. We would advise the students to first talk regarding this issue to their parents, guardian or anyone trusted. Nextly, we would also like to list down the possible and available hotlines for any mental health related problems and issues. At times, students do not realise or they are not aware of so many agencies and parties that are willing to help with their issues. By this way, they will then be able to seek help from the right party or association. We hope that with all these methods and ways, students will be able to receive the proper medical help to treat their conditions. Hence, we really hope that students with mental health medical problems are able to alleviate or reduce their levels of depression, anxiety and stress .

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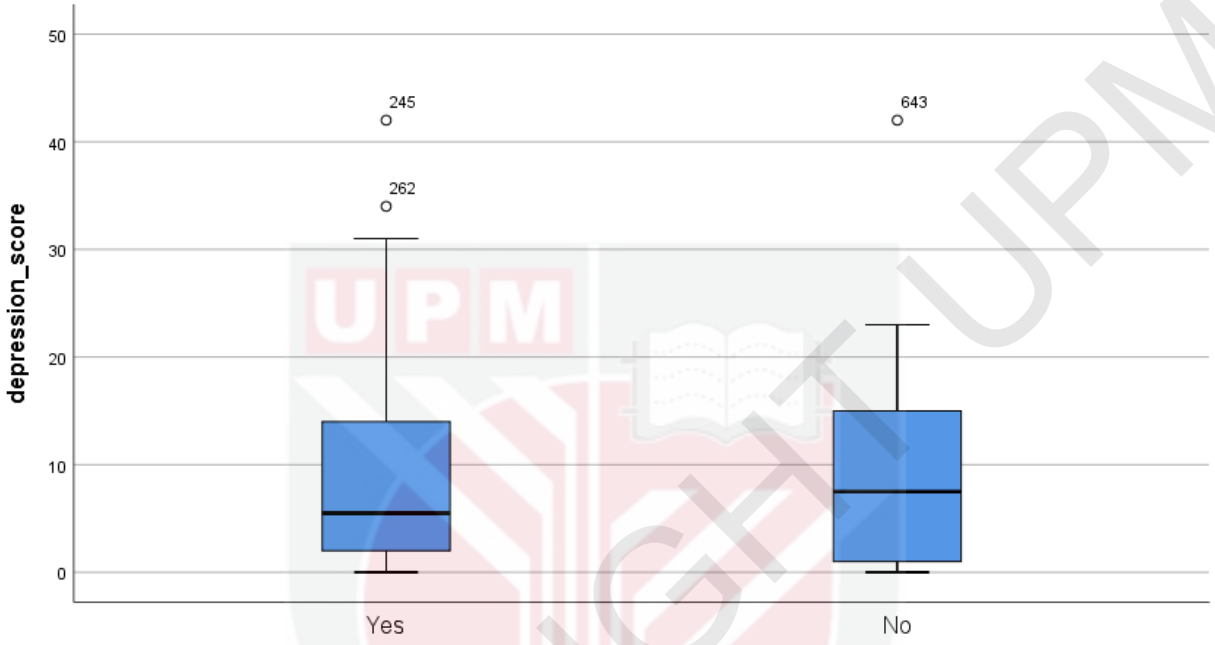
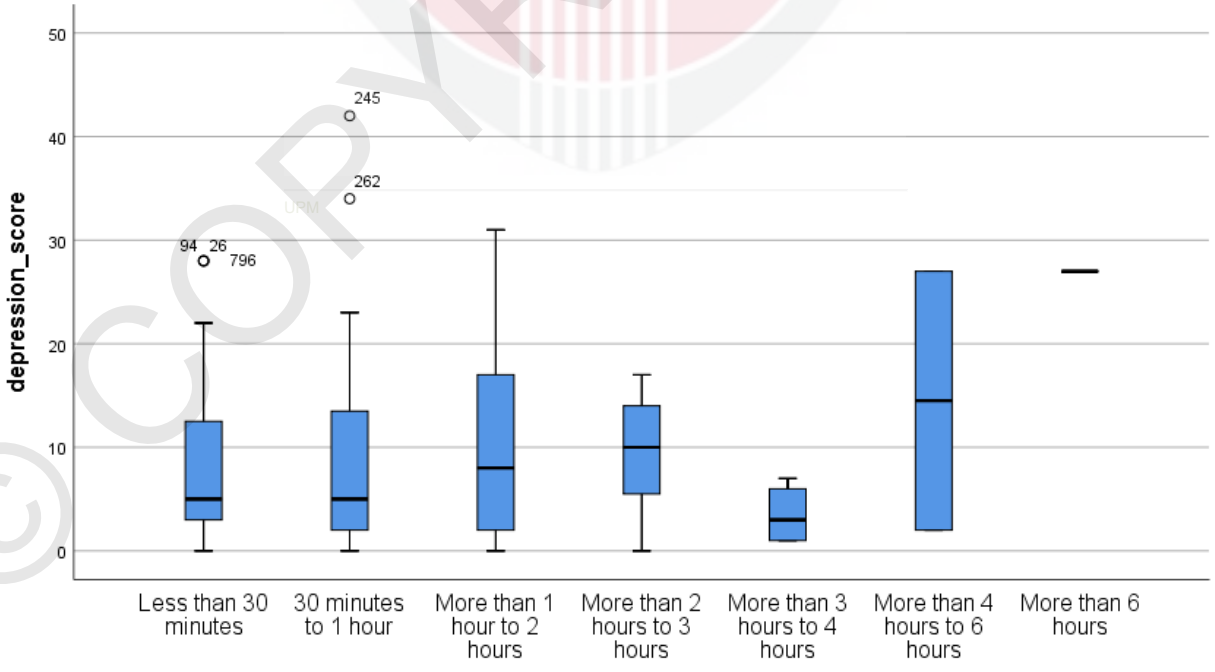
APPENDIX C - BOXPLOT

PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND DEPRESSION AMONG MALE RESPONDENTS



1. Do you have a Facebook account? If 1, you may skip the questions below and move straight to Question 5.



2. How much time on average do you spend on Facebook per day?

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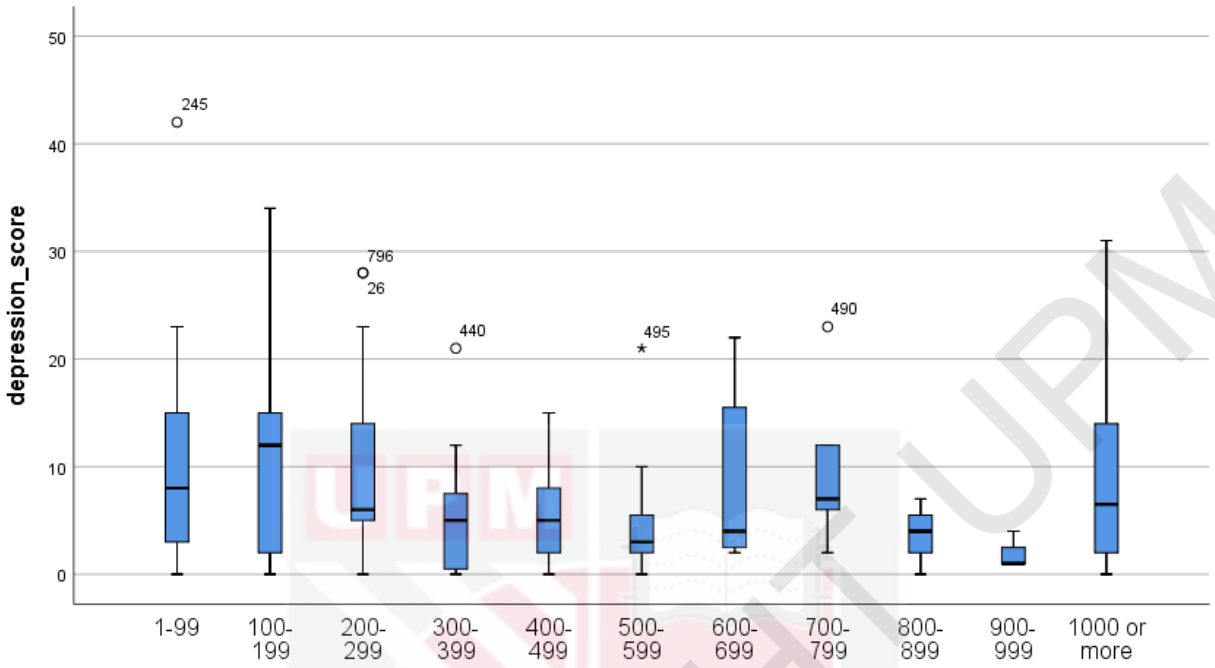
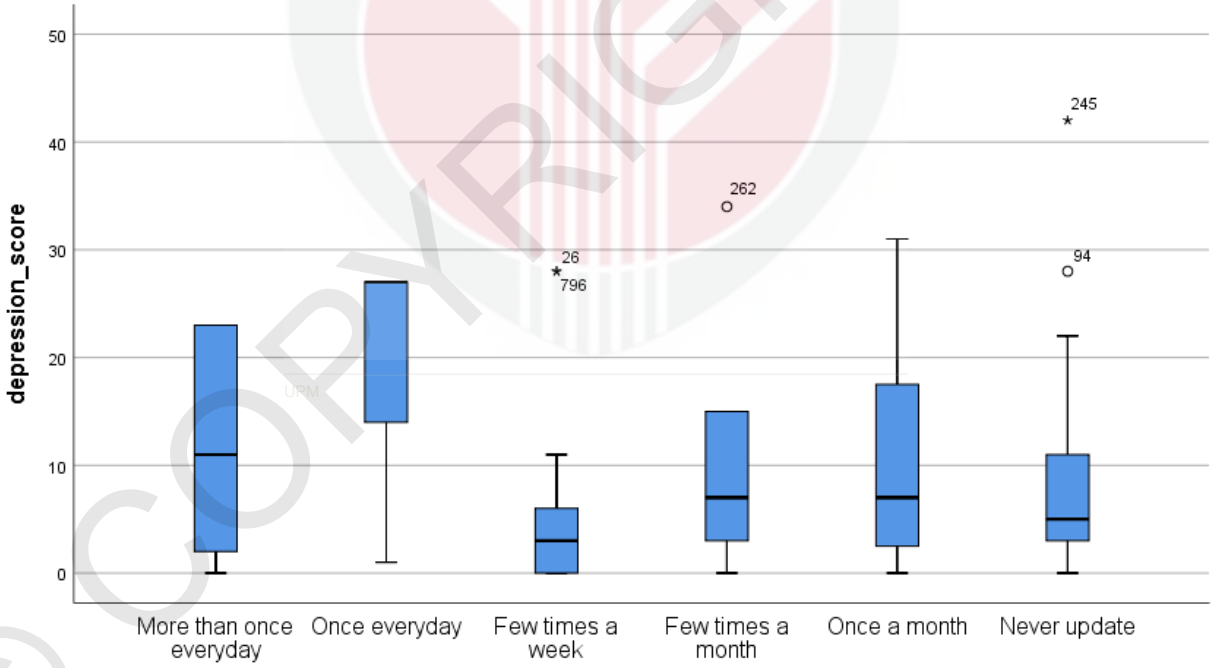


3. How many friends do you have on Facebook?



4. How often do you update on Facebook?

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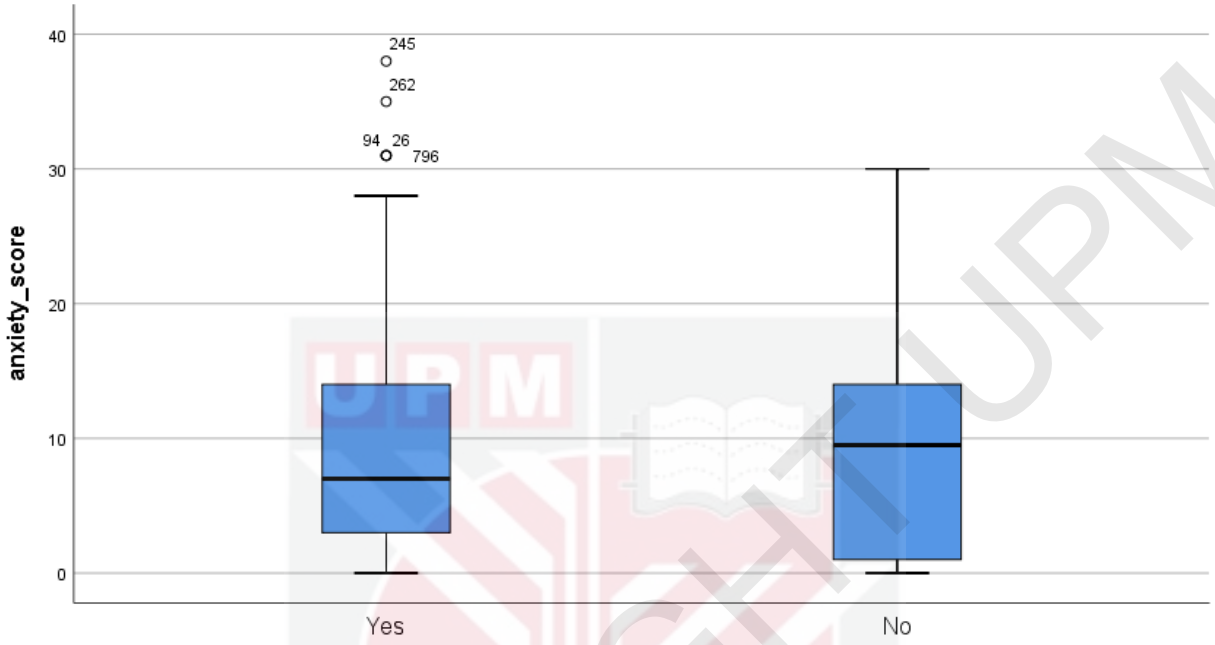
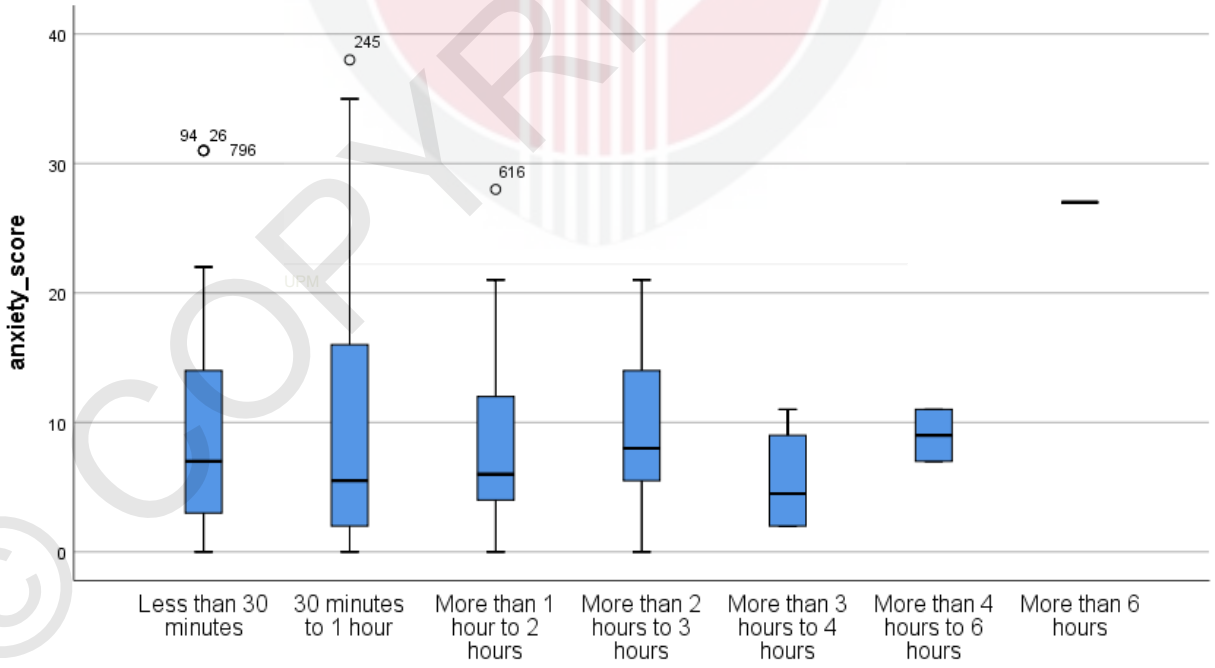
PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND ANXIETY AMONG MALE RESPONDENTS



1. Do you have a Facebook account? If 1, you may skip the questions below and move straight to Question 5.



2. How much time on average do you spend on Facebook per day?

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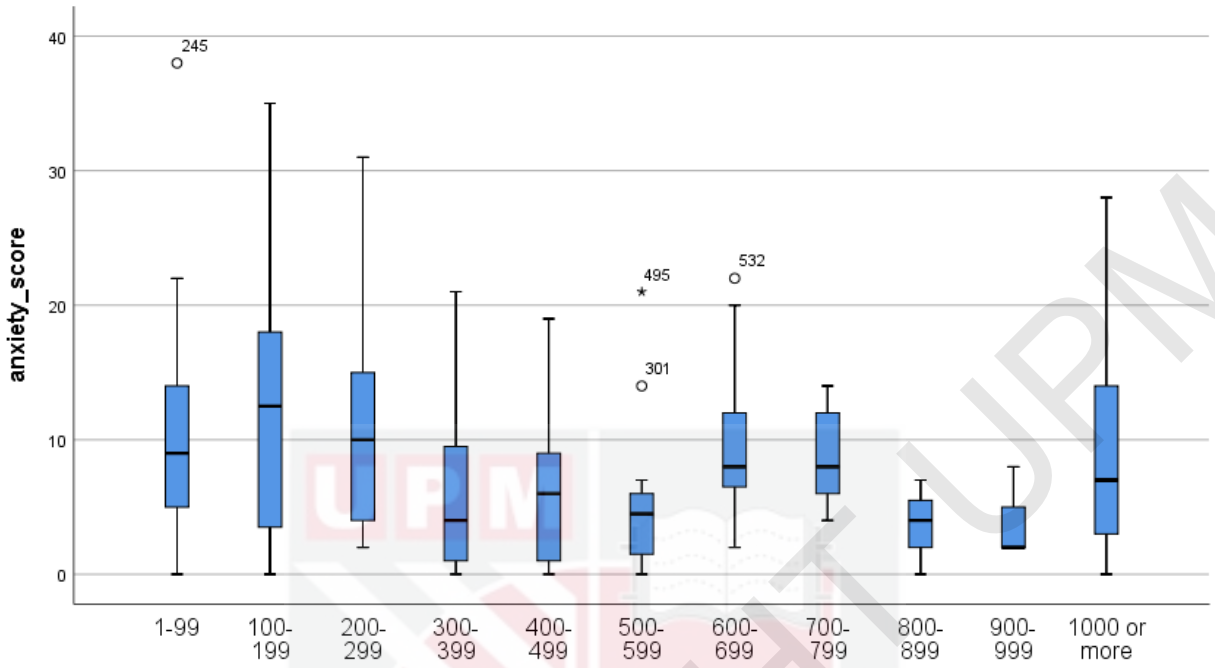

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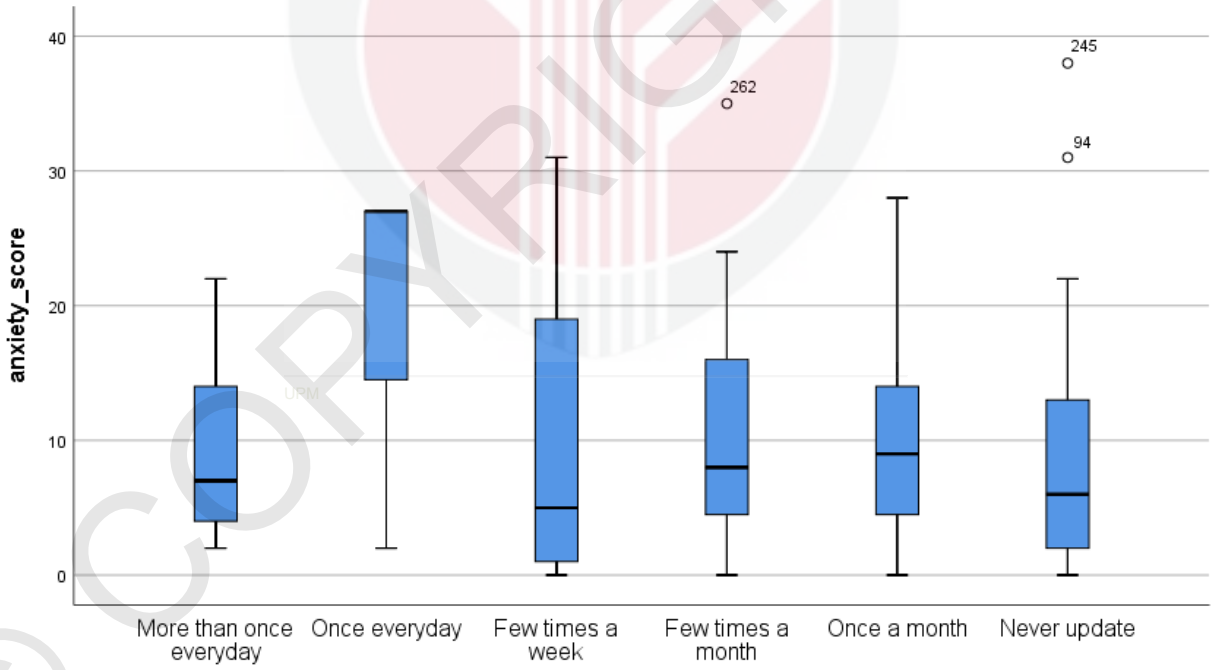

4. How often do you update on Facebook?

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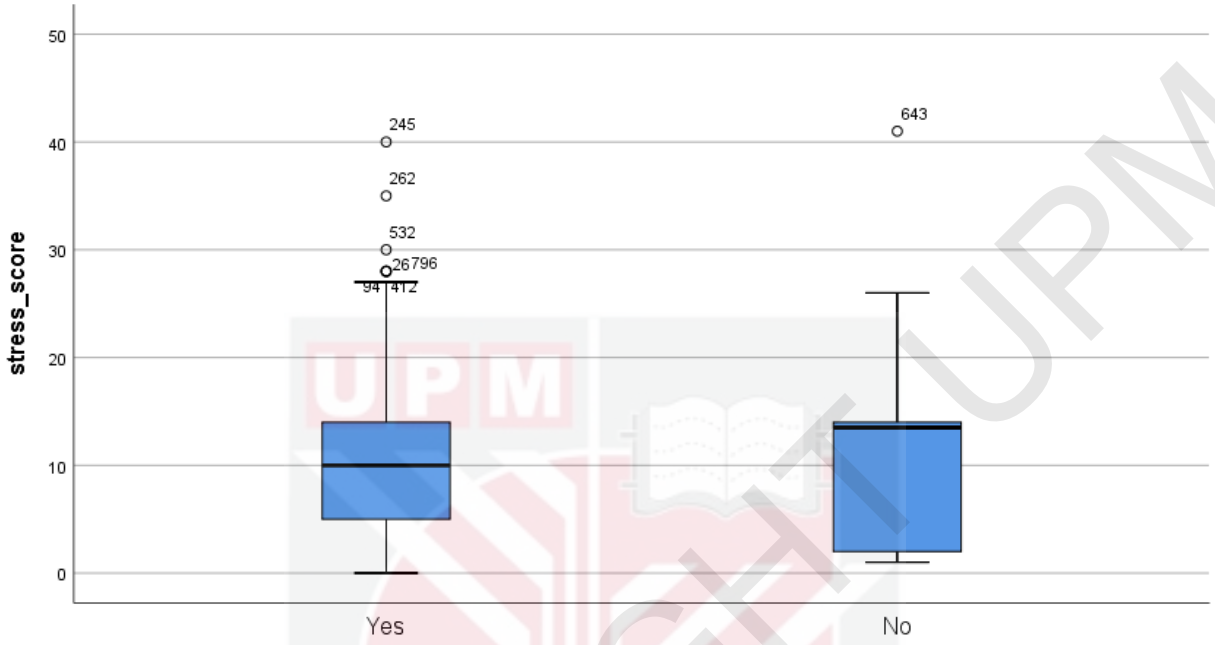
PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND STRESS AMONG MALE RESPONDENTS



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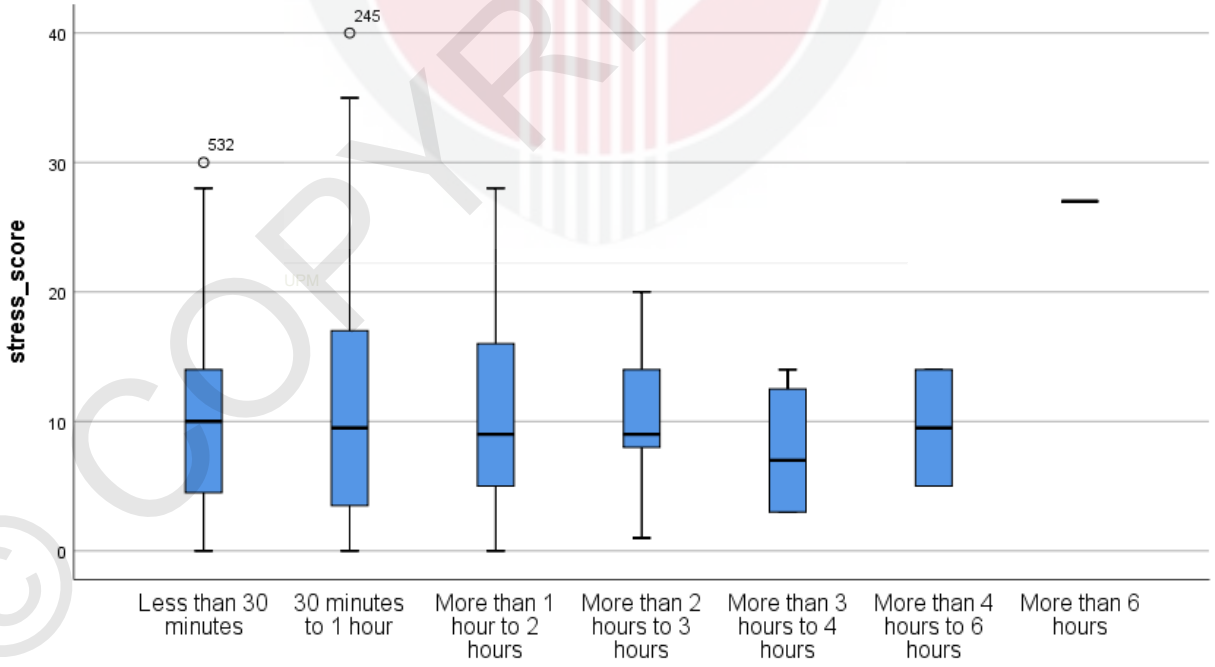

2. How much time on average do you spend on Facebook per day?

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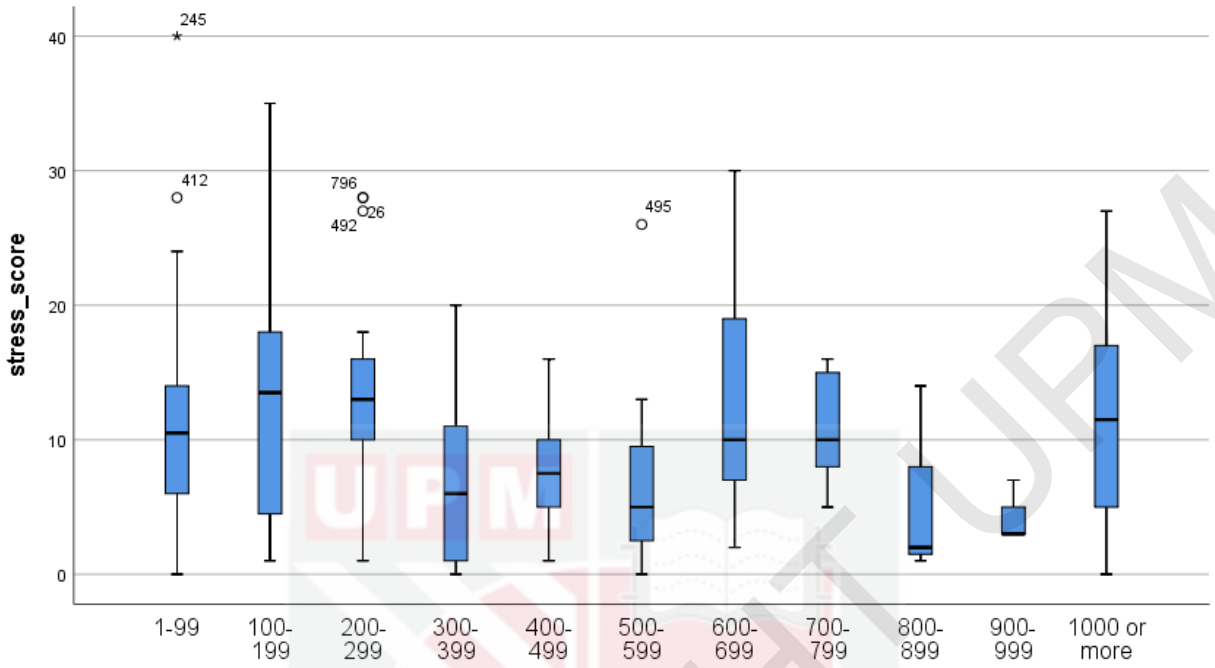

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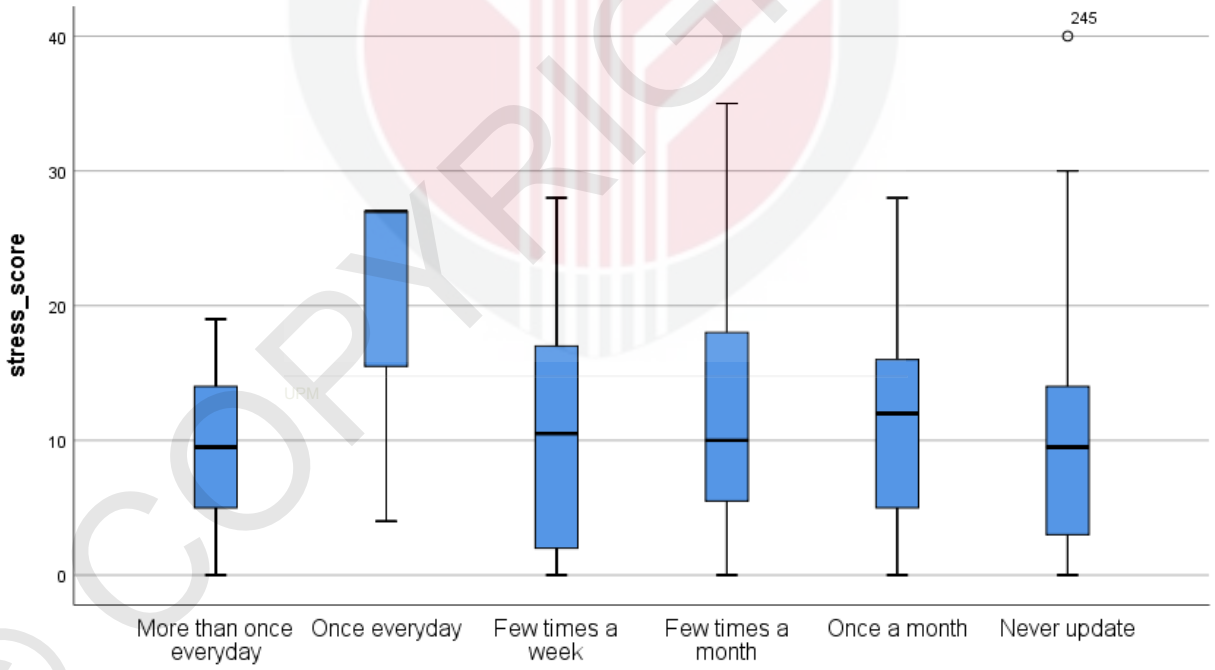

4. How often do you update on Facebook?

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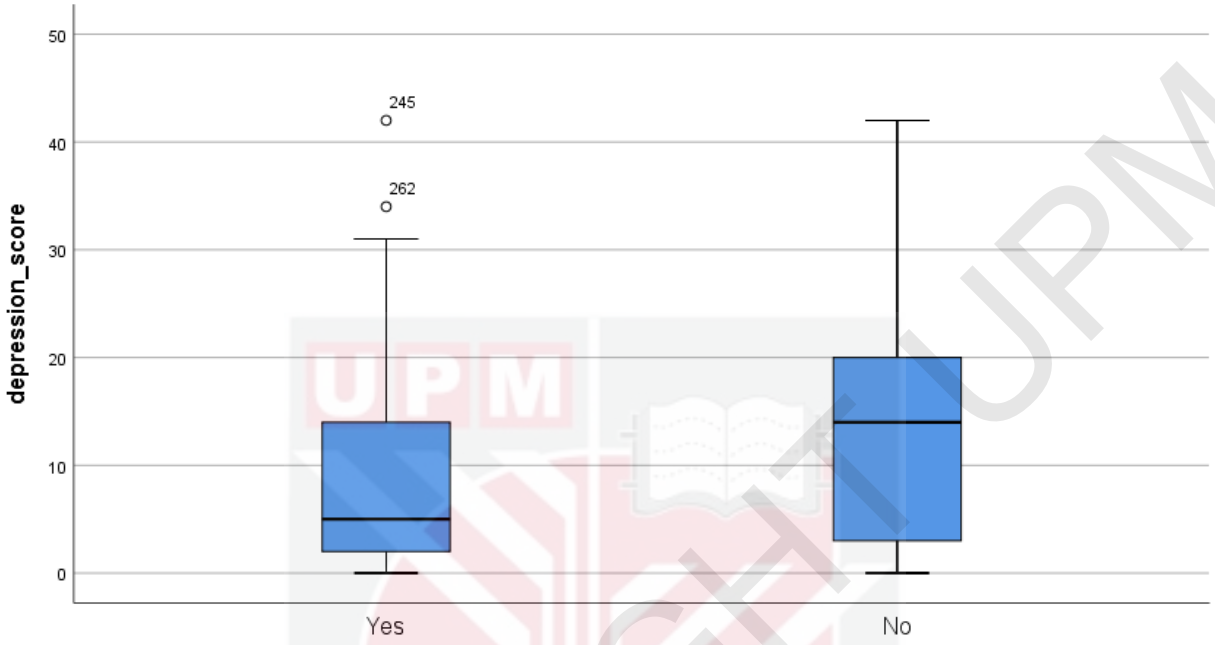
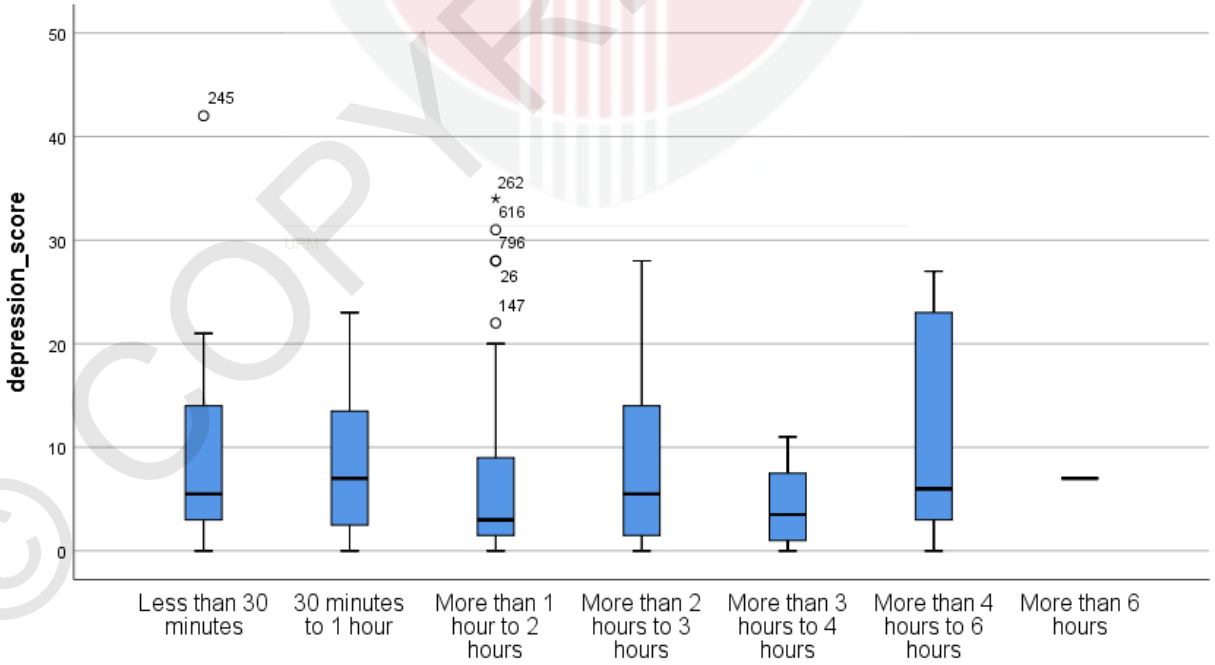
PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND DEPRESSION AMONG MALE RESPONDENTS



5. Do you have a Instagram account? If 1, you may skip the questions below and move straight to Question 10.



6. How much time on average do you spend on Instagram per day?

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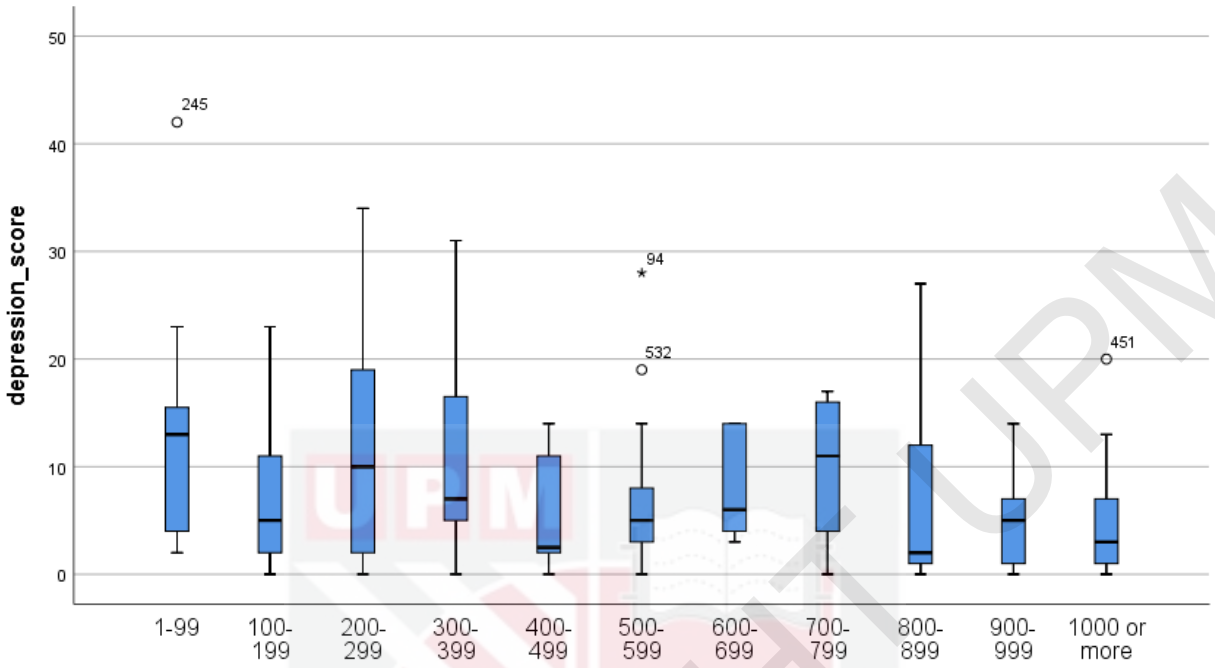
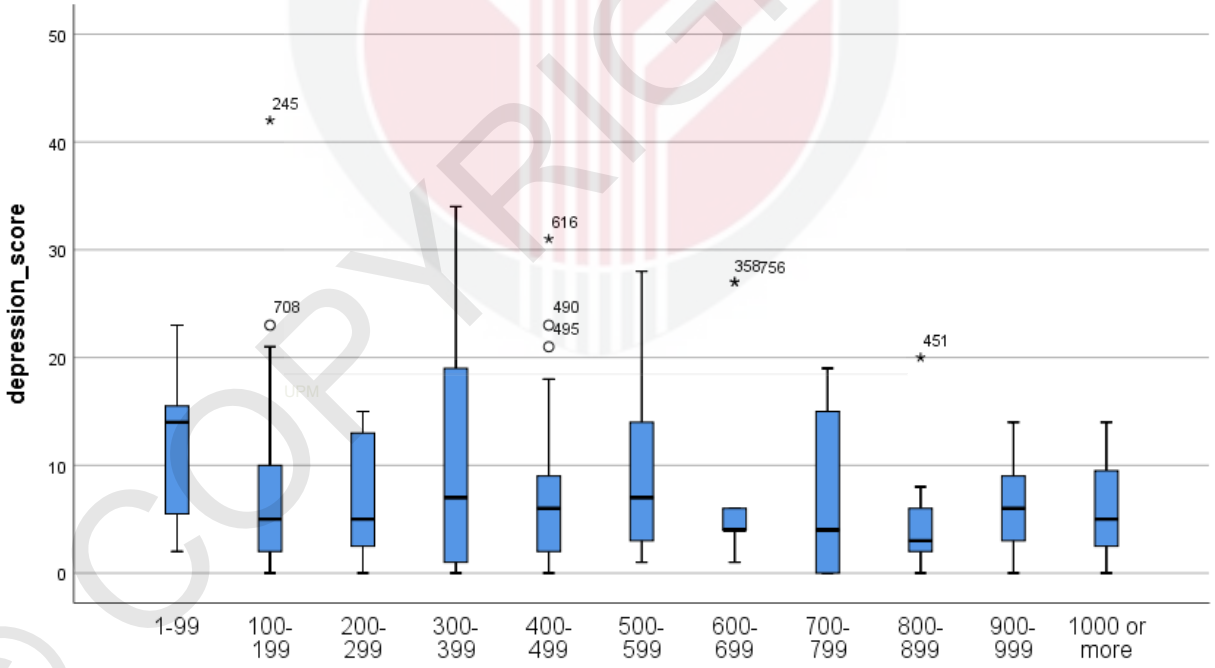


7. How many followers do you have on Instagram?



8. How many people are you following on Instagram?

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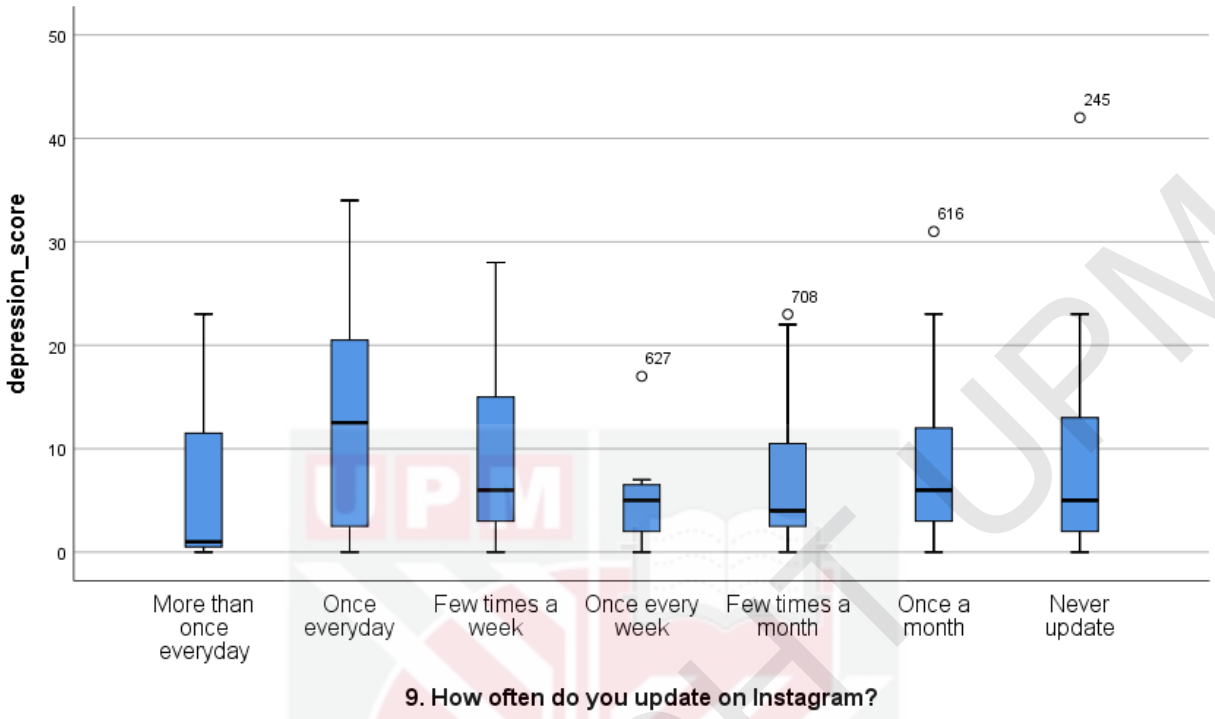
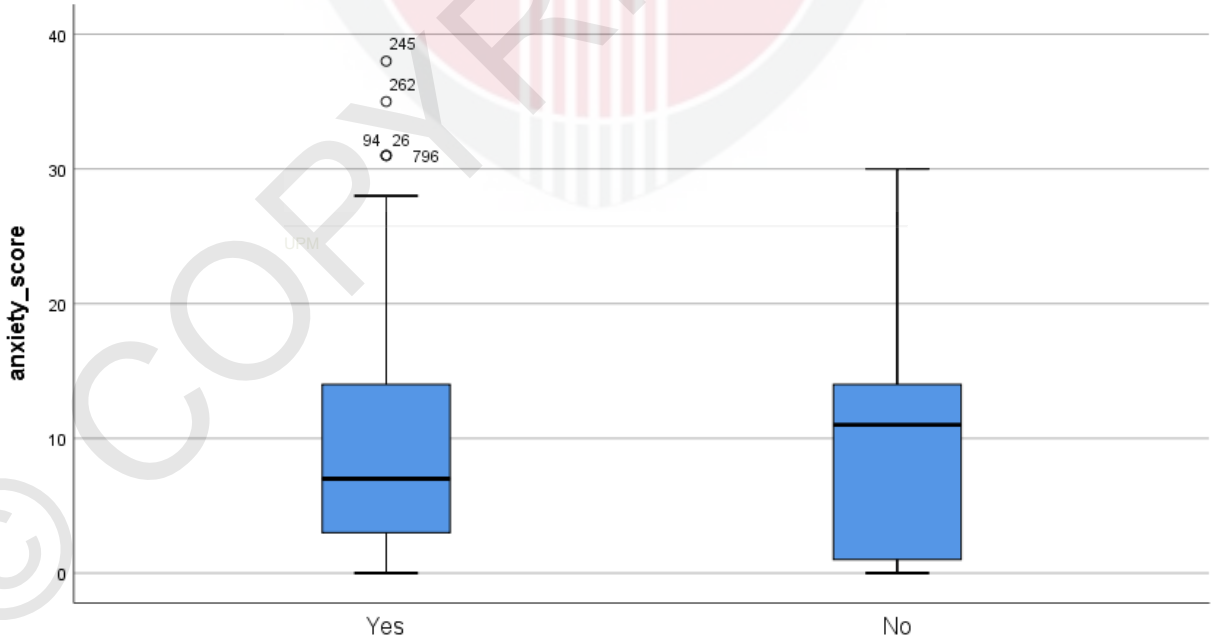


PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND ANXIETY AMONG MALE RESPONDENTS



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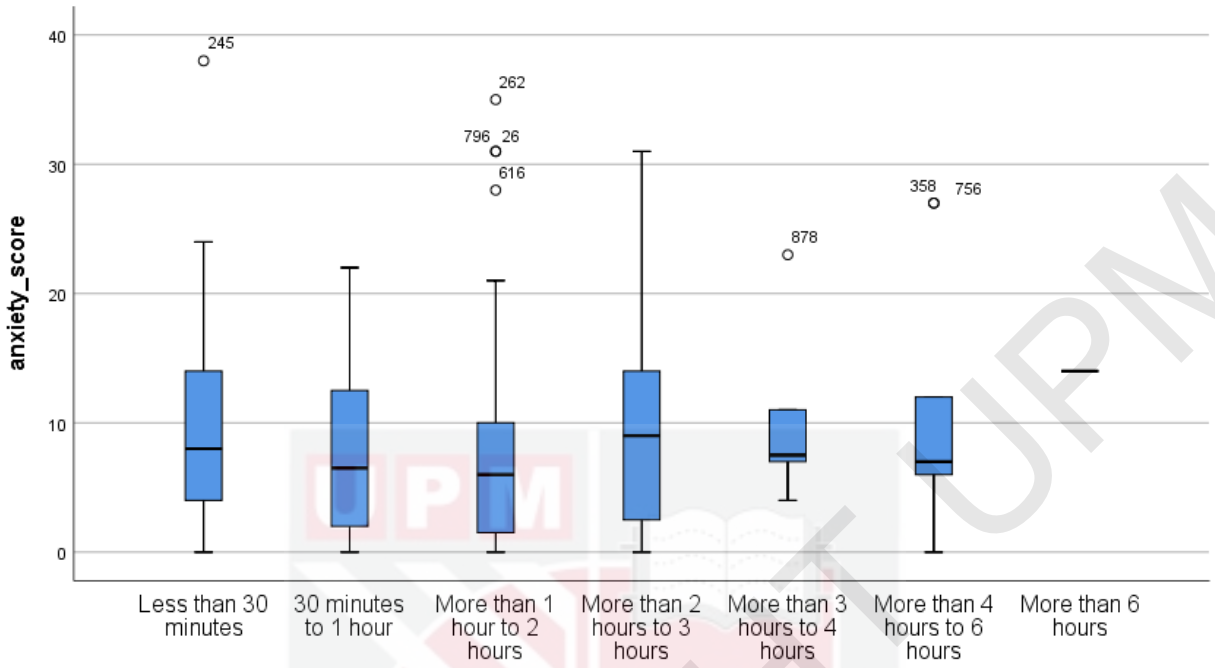
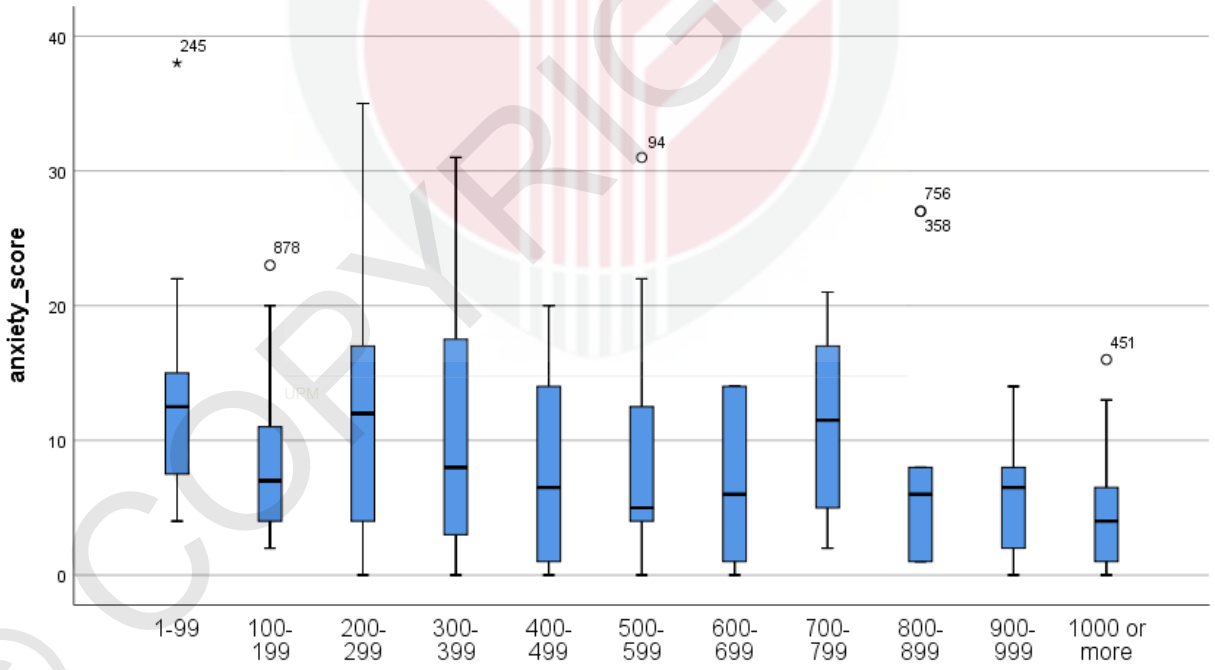


6. How much time on average do you spend on Instagram per day?



7. How many followers do you have on Instagram?

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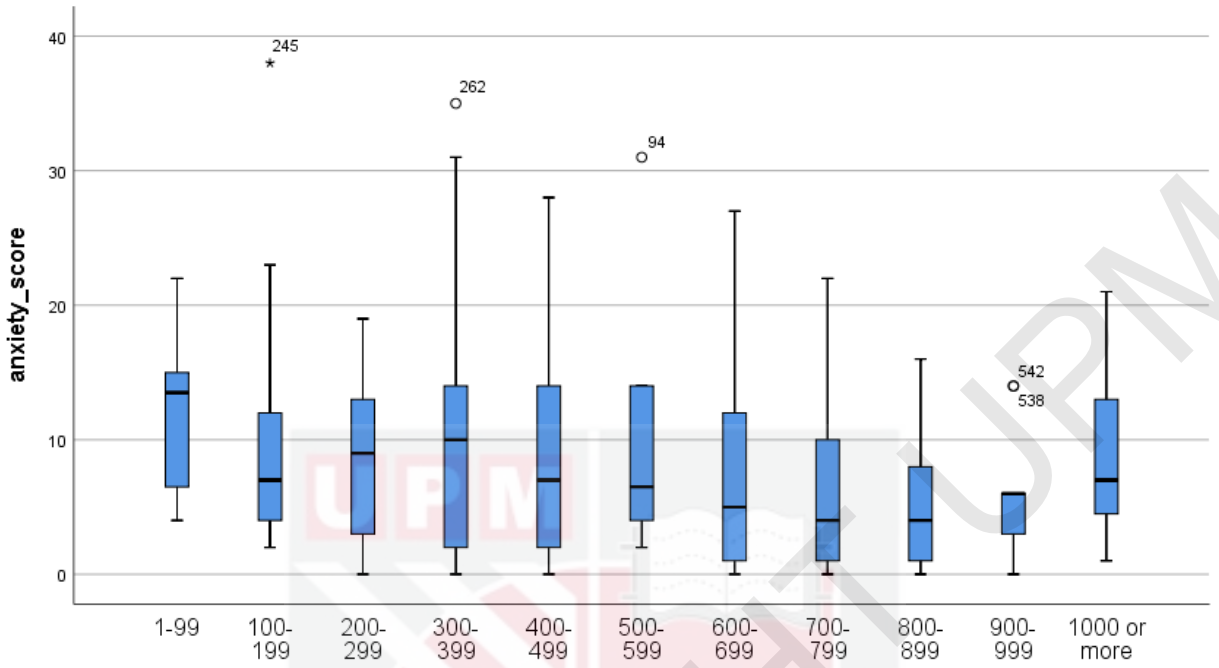

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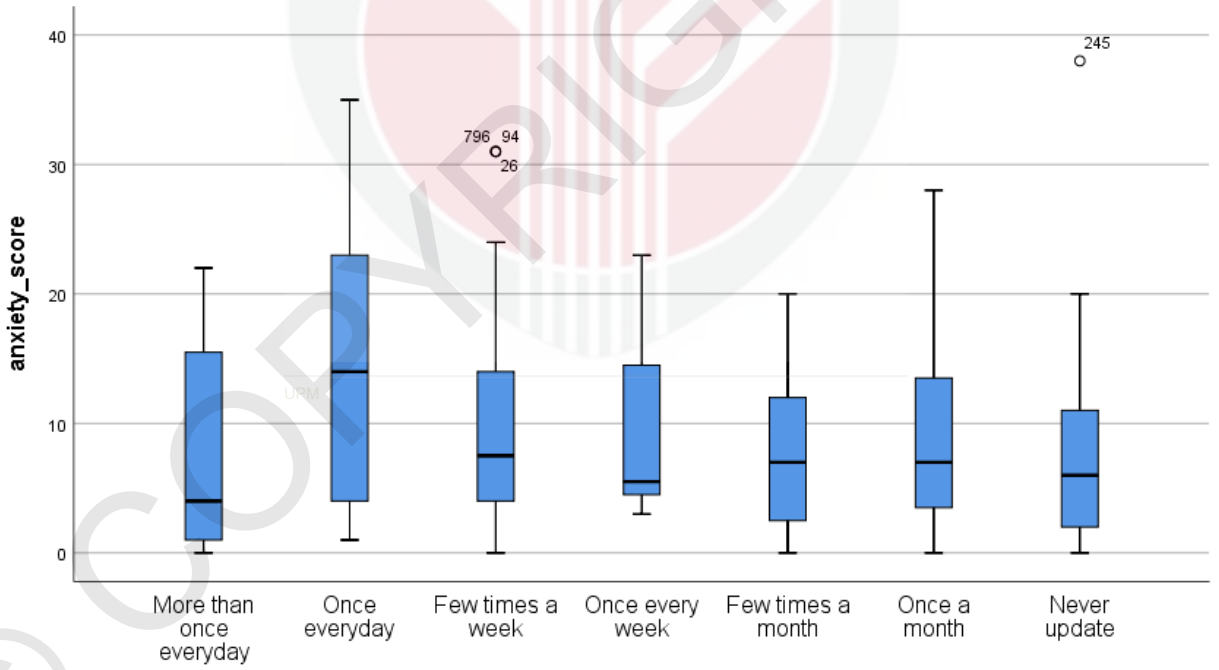

9. How often do you update on Instagram?

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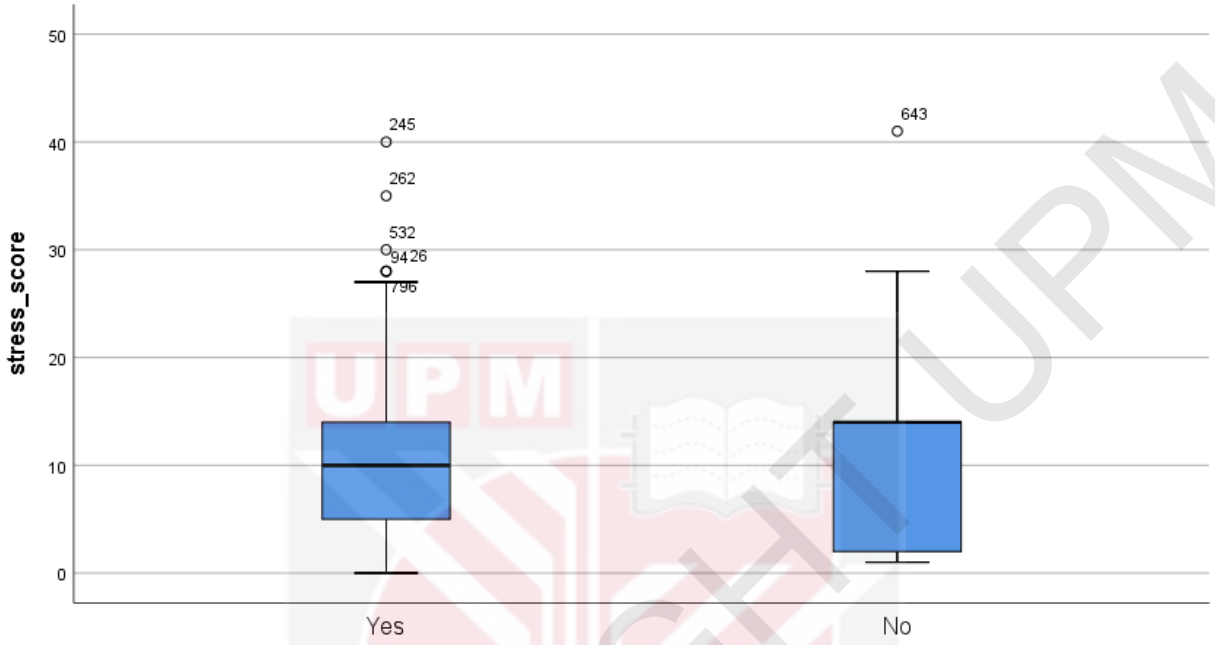
PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND STRESS AMONG MALE RESPONDENTS



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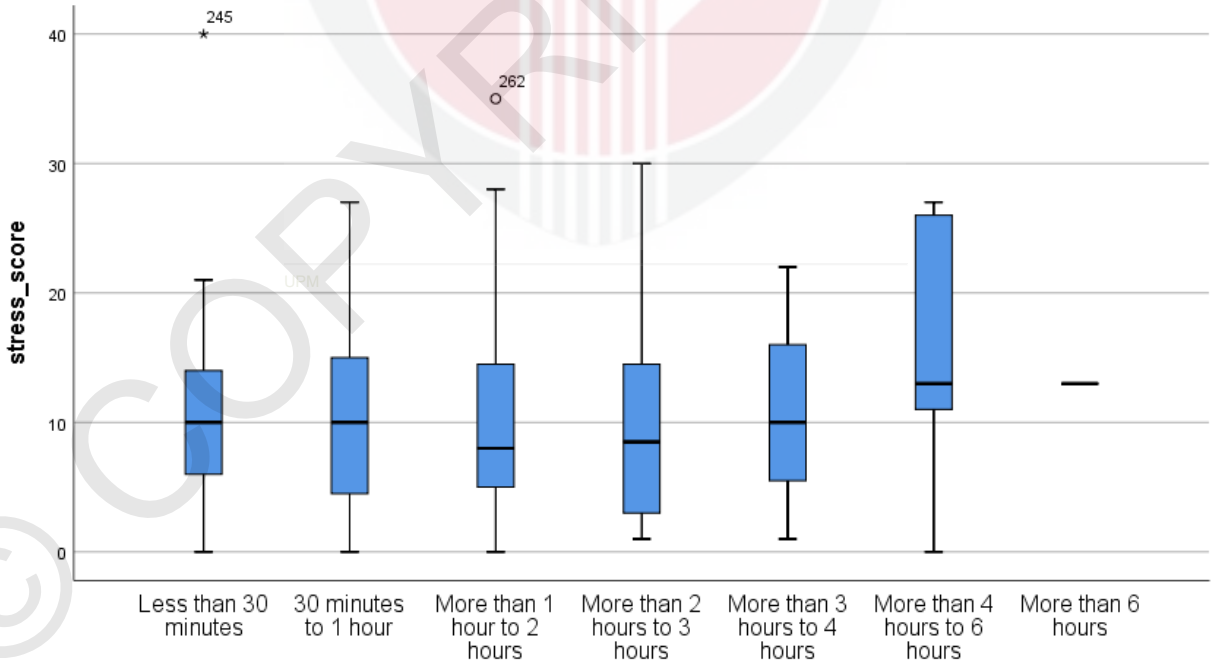

6. How much time on average do you spend on Instagram per day?

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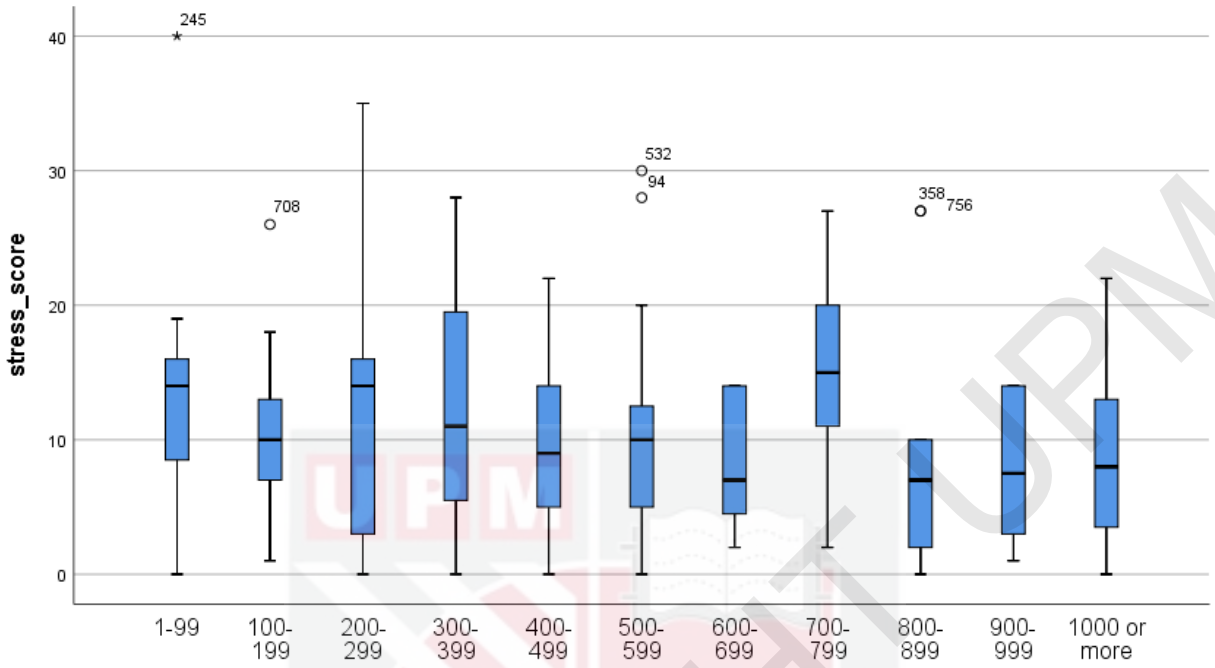

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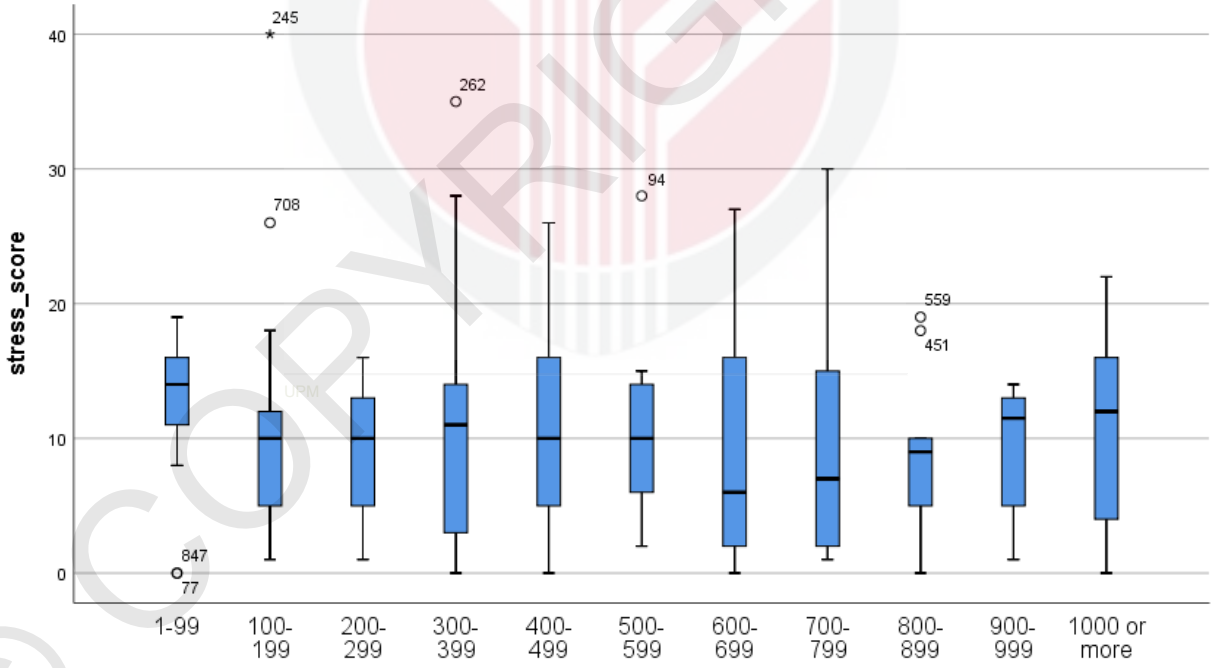

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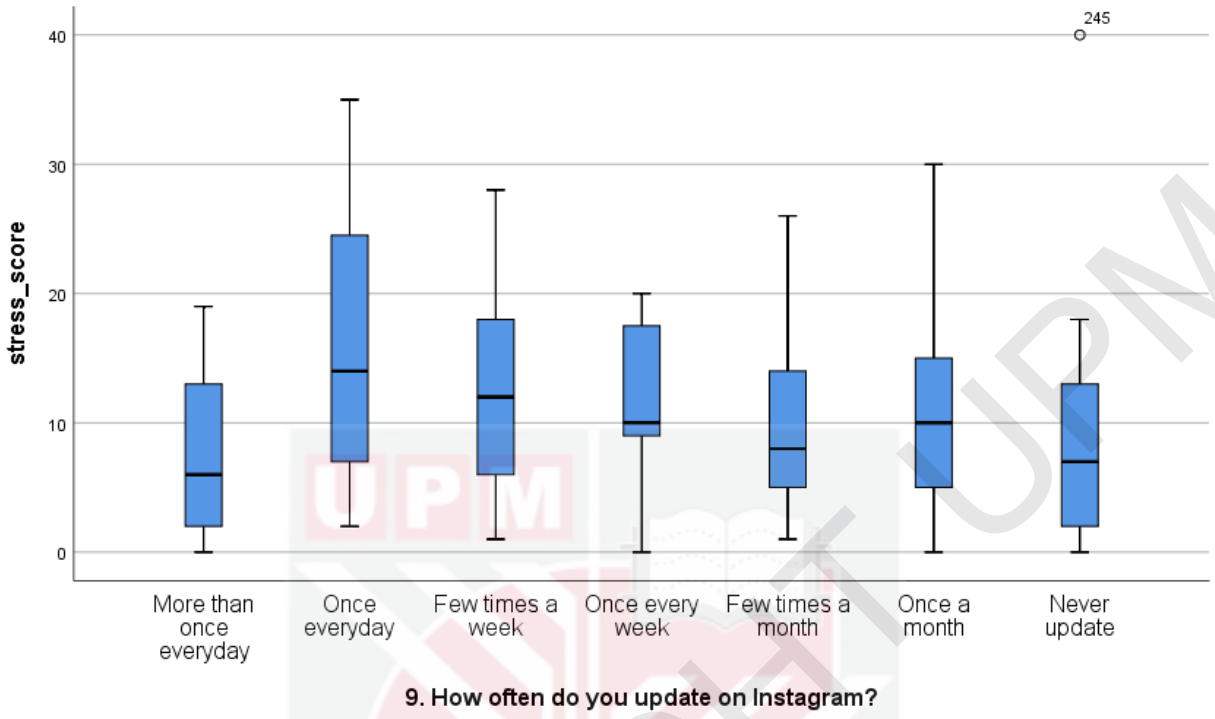
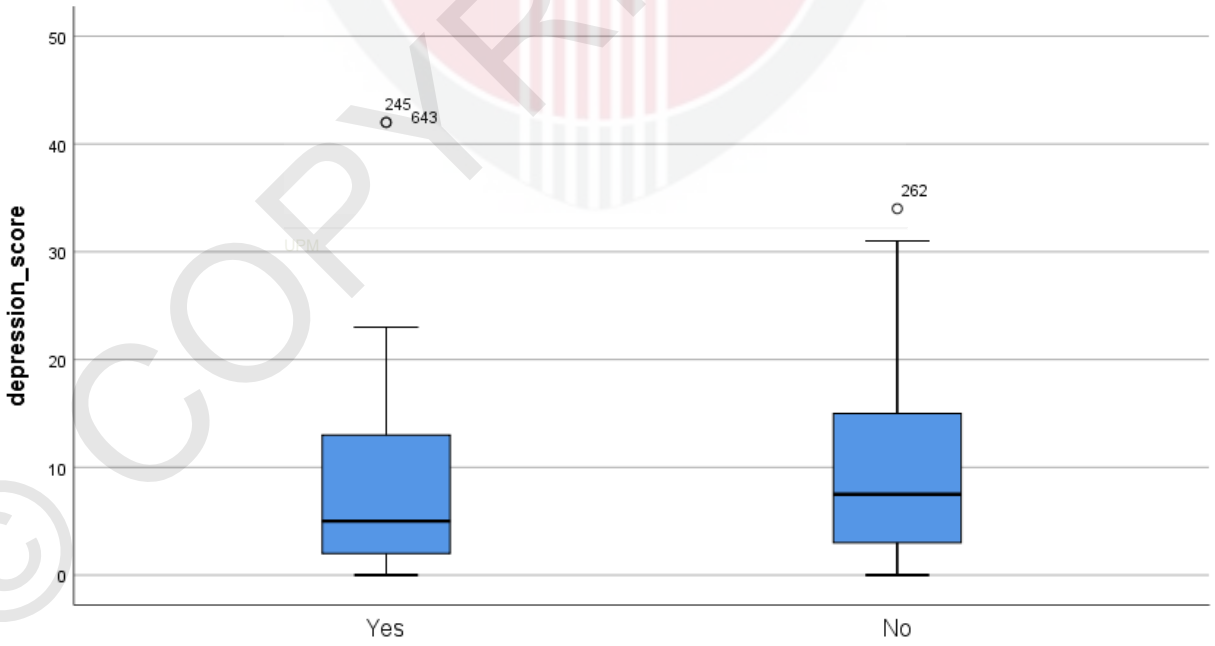


PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND DEPRESSION AMONG MALE RESPONDENTS



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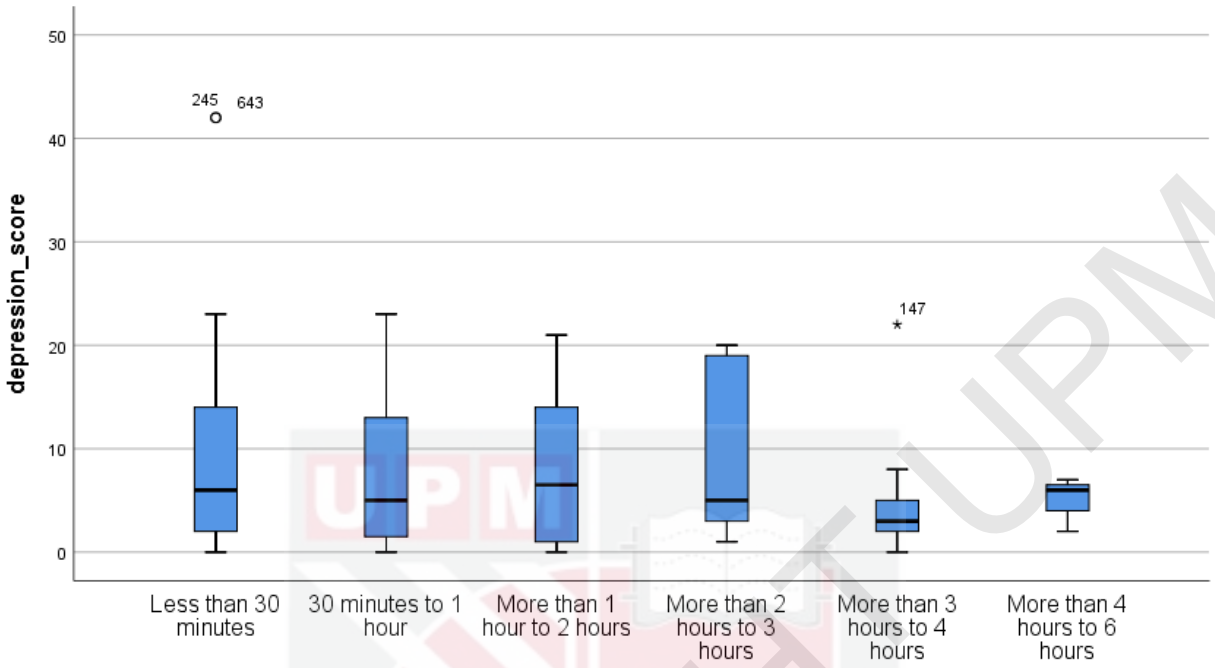
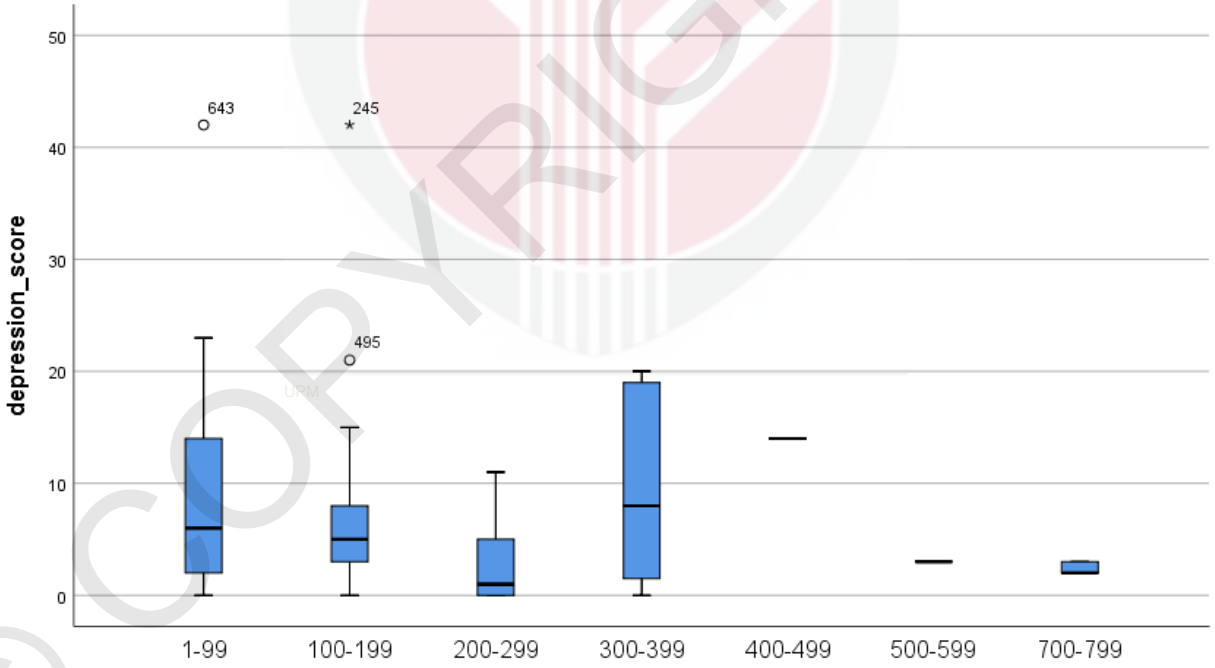


11. How much time on average do you spend on Twitter per day?



12. How many followers do you have on Twitter?

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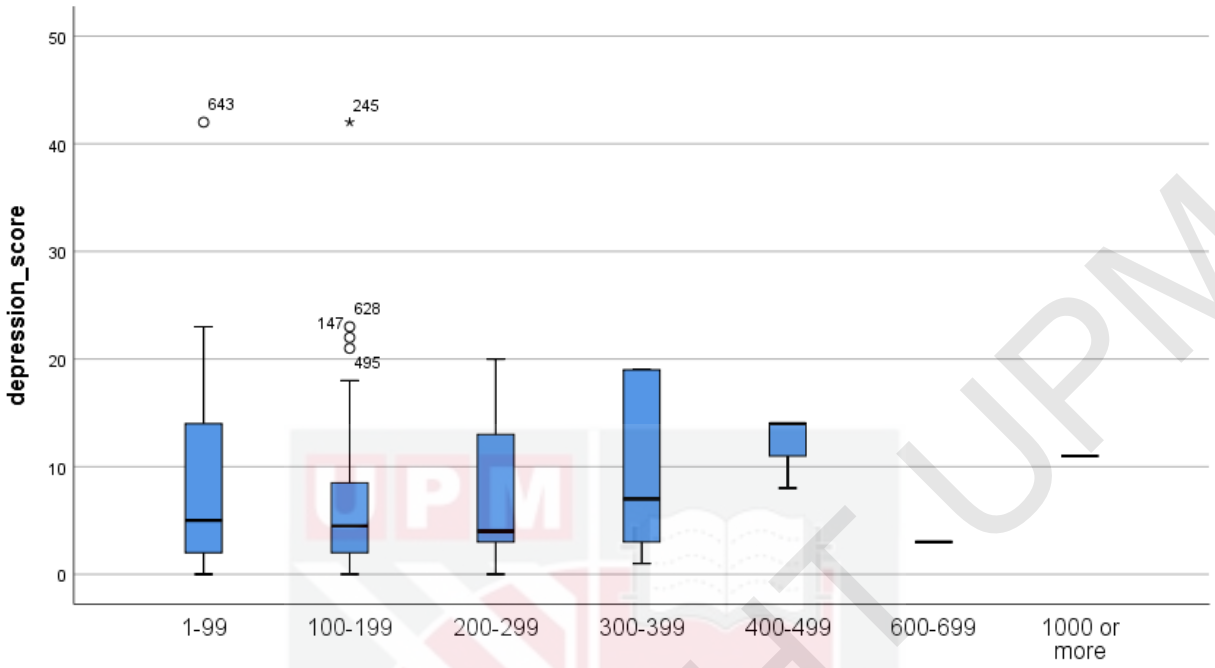
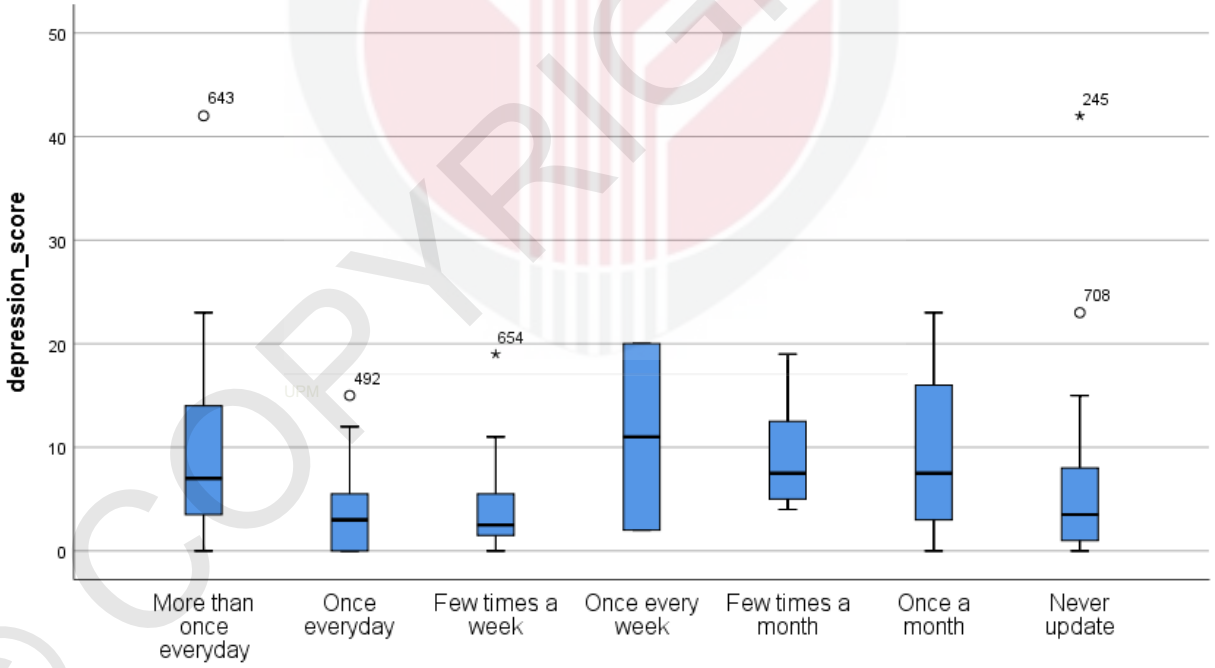


13. How many account do you follow on Twitter?



14. How often do you update on Twitter?

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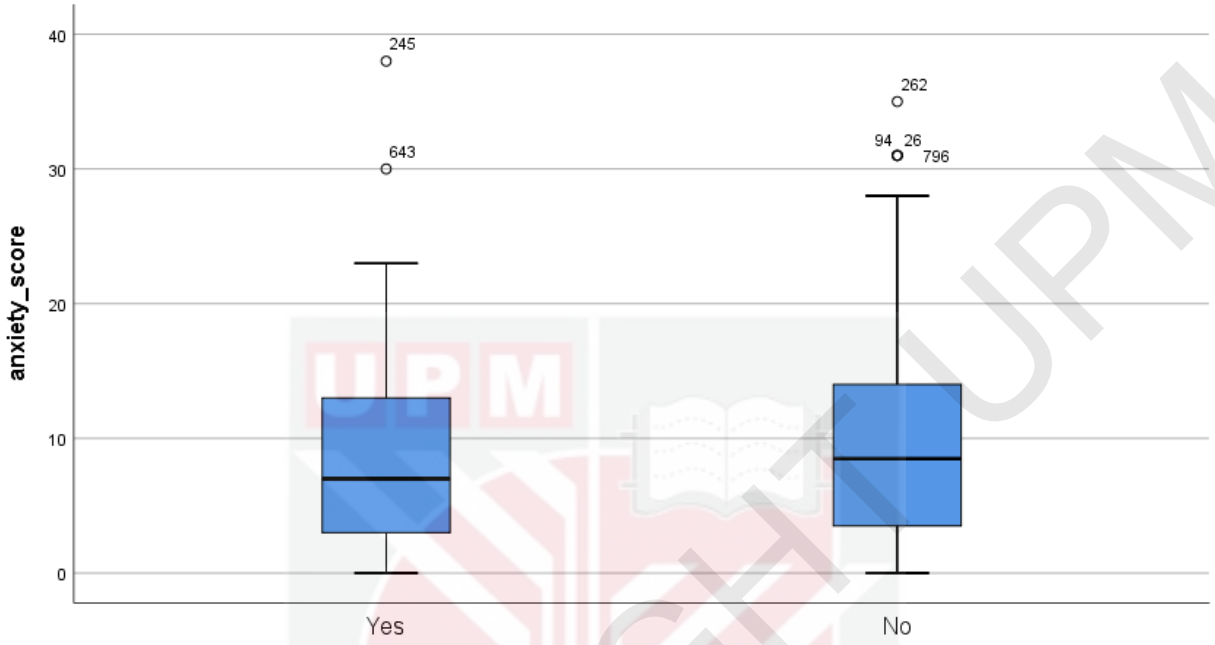
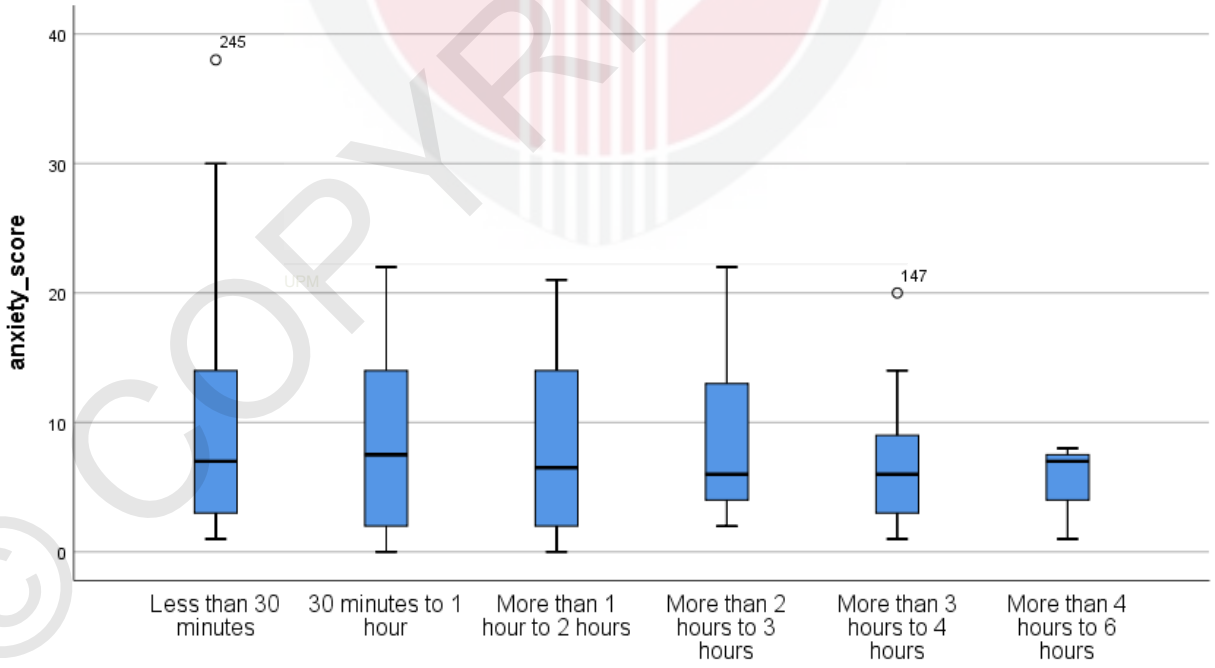
PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND ANXIETY AMONG MALE RESPONDENTS



10. Do you have a Twitter account? If 1, you may skip the questions below and move to the next section (DASS-42 Section).



11. How much time on average do you spend on Twitter per day?

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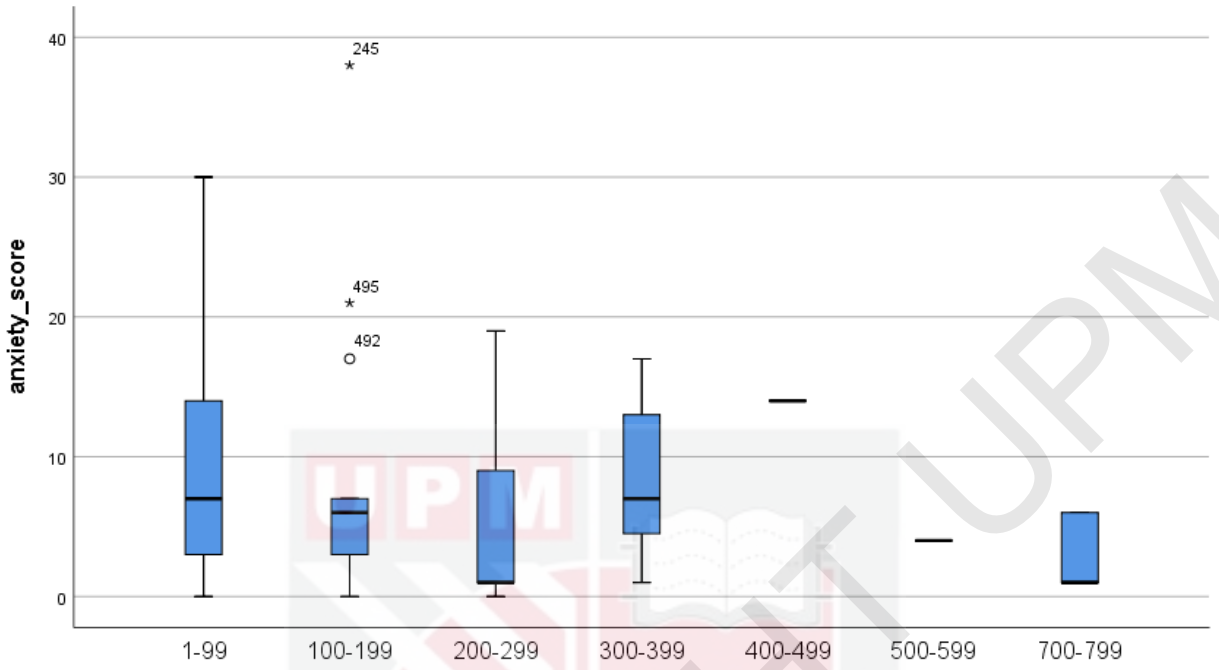
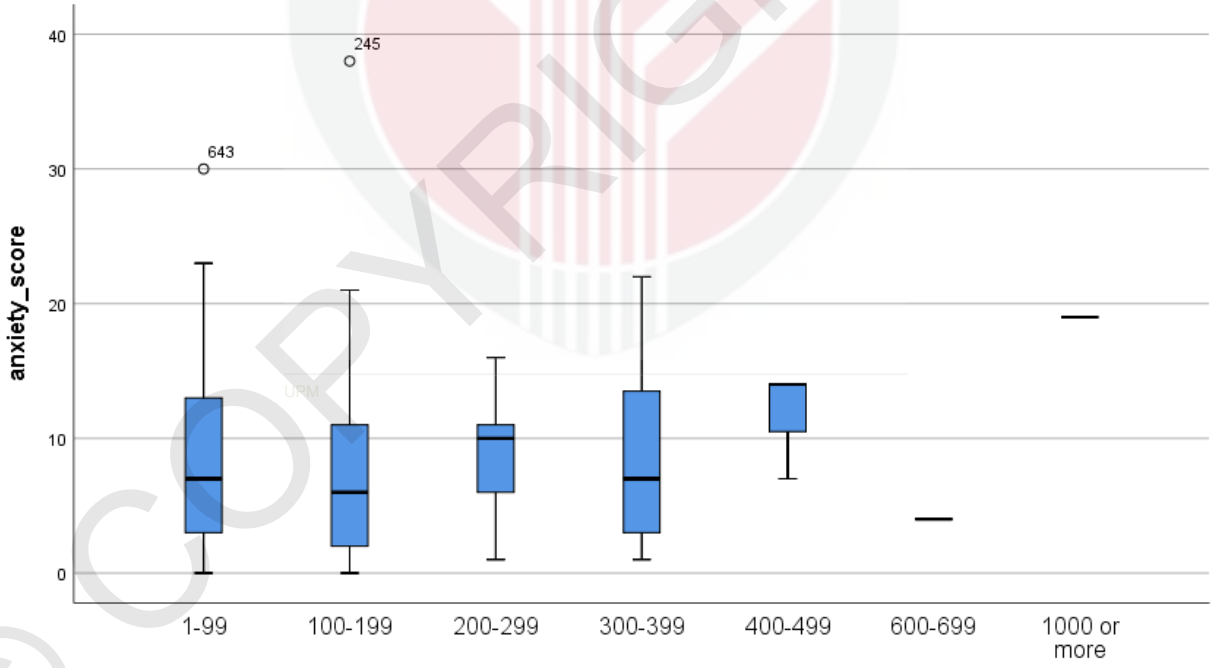


12. How many followers do you have on Twitter?



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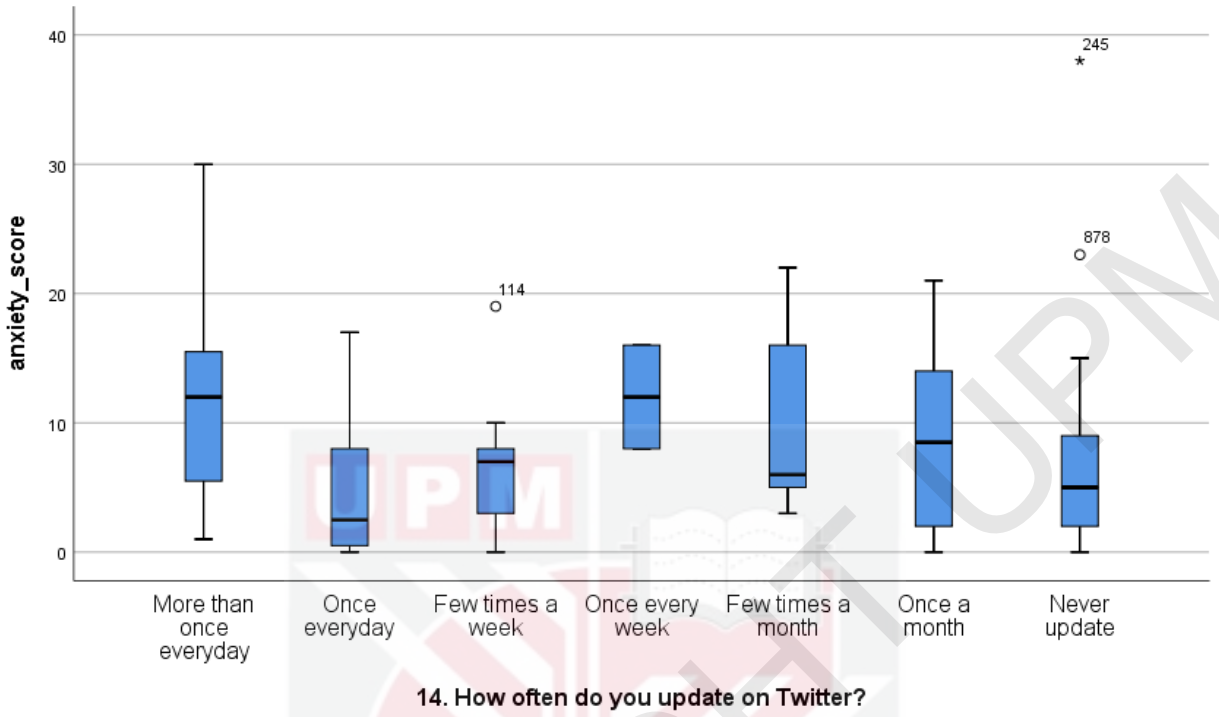
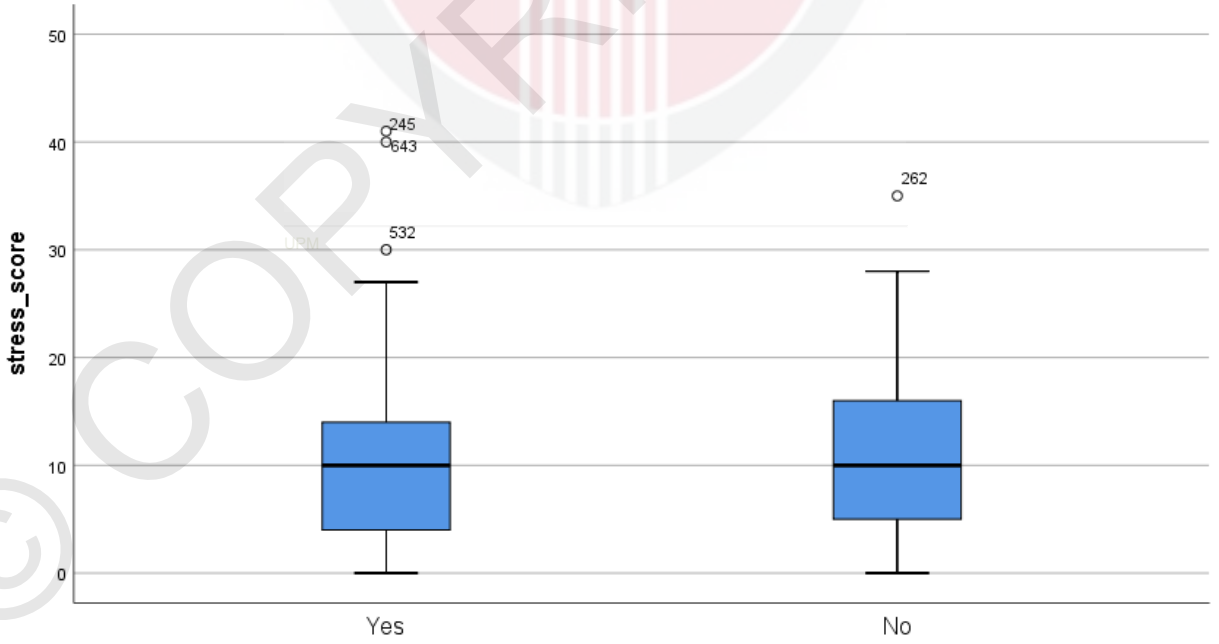


PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND STRESS AMONG MALE RESPONDENTS



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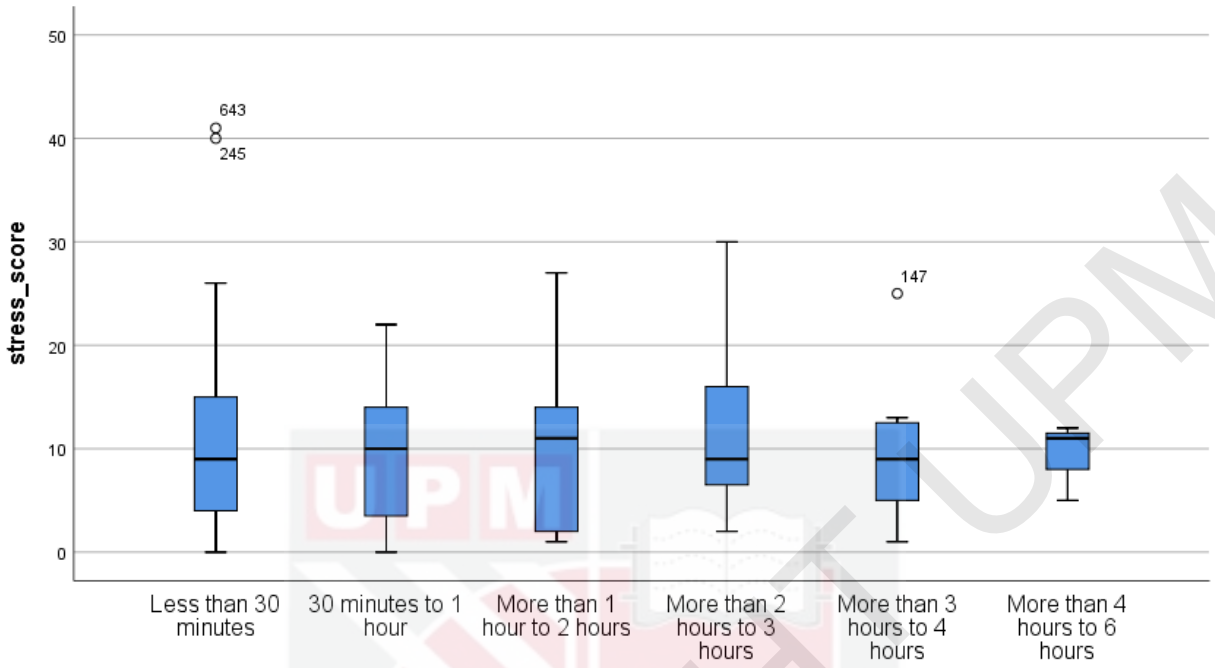
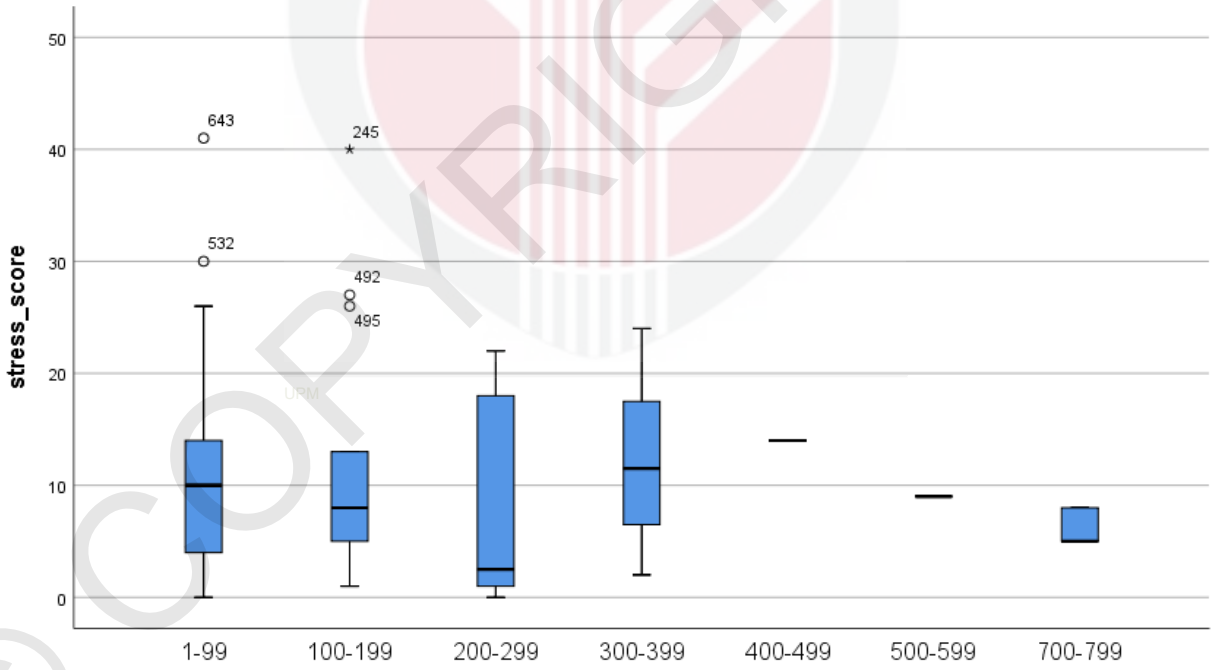


11. How much time on average do you spend on Twitter per day?



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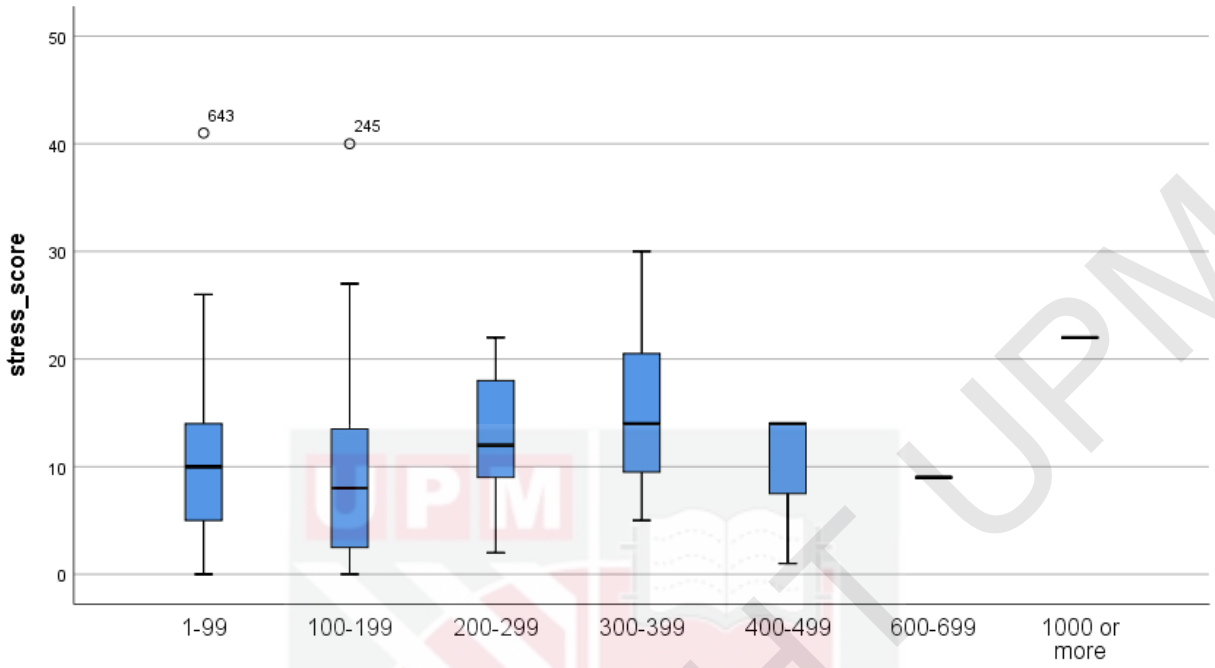

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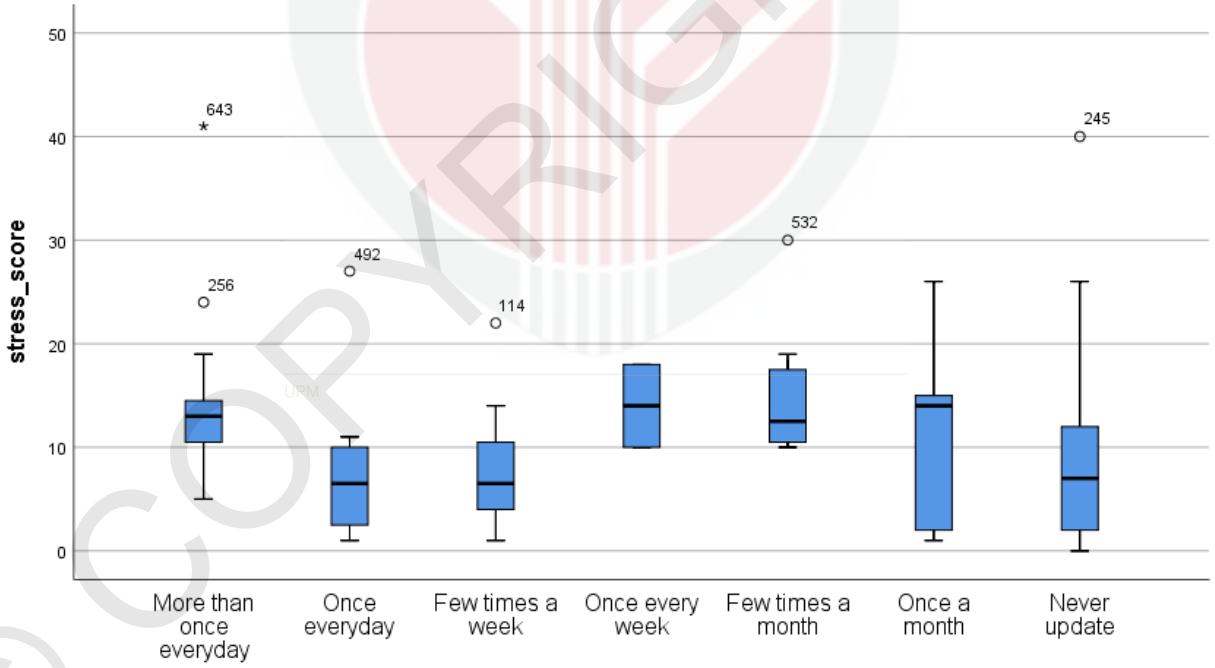

14. How often do you update on Twitter?

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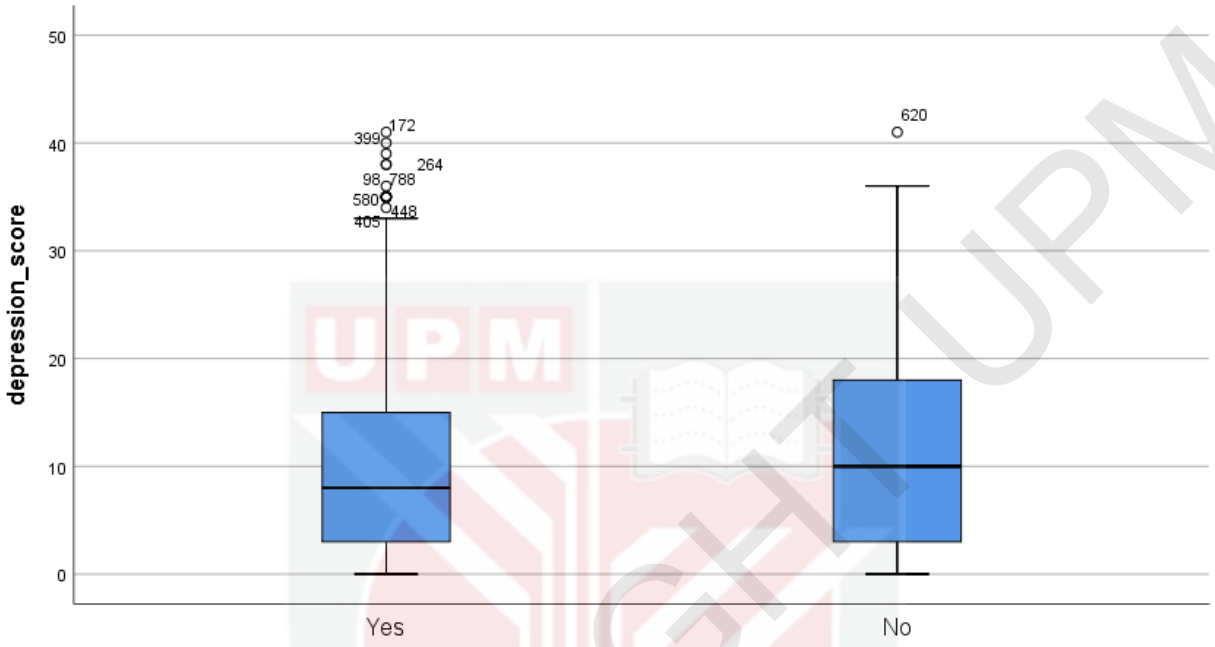
PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND DEPRESSION AMONG FEMALE RESPONDENTS



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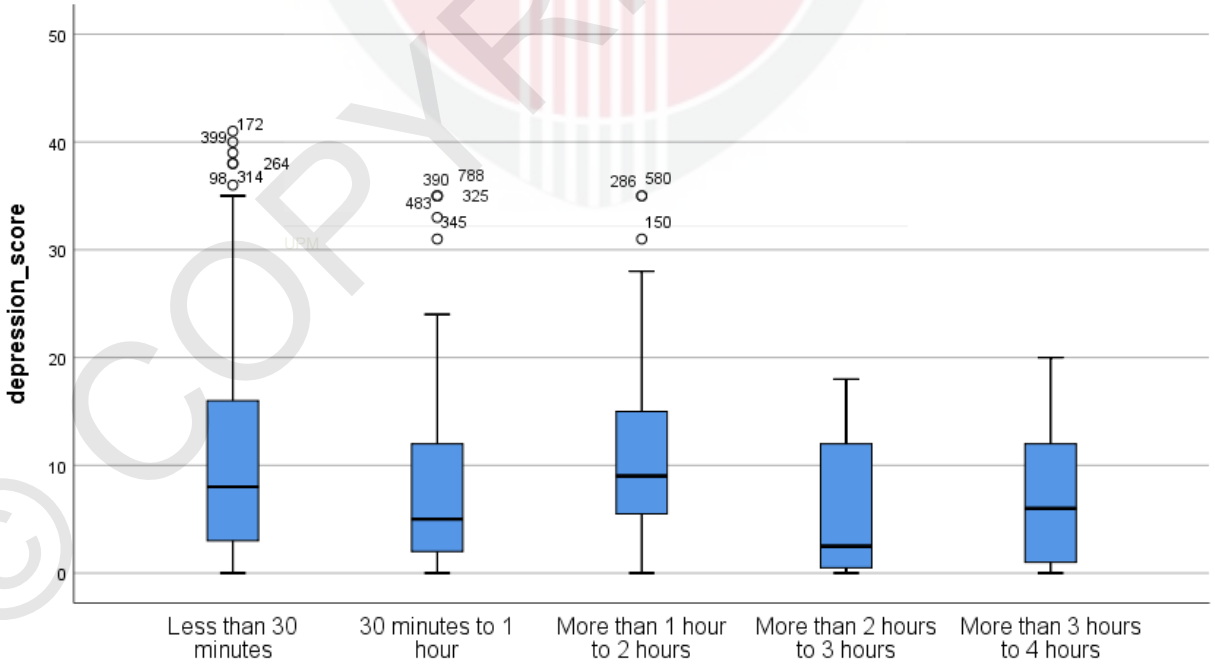

2. How much time on average do you spend on Facebook per day?

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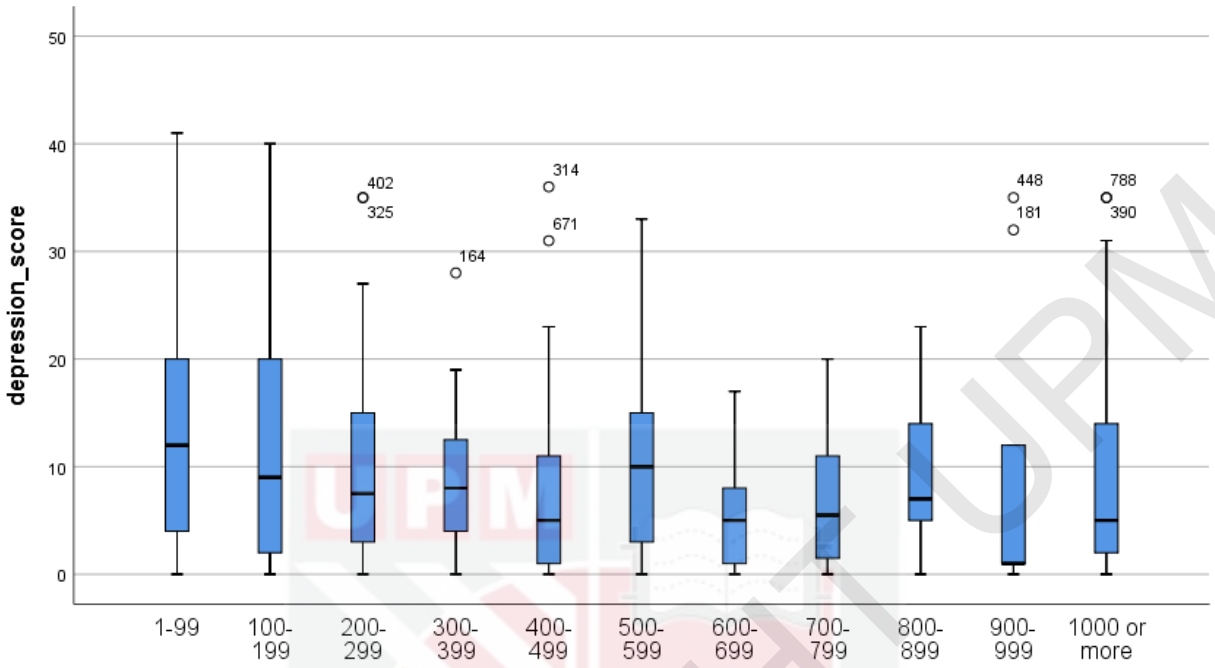

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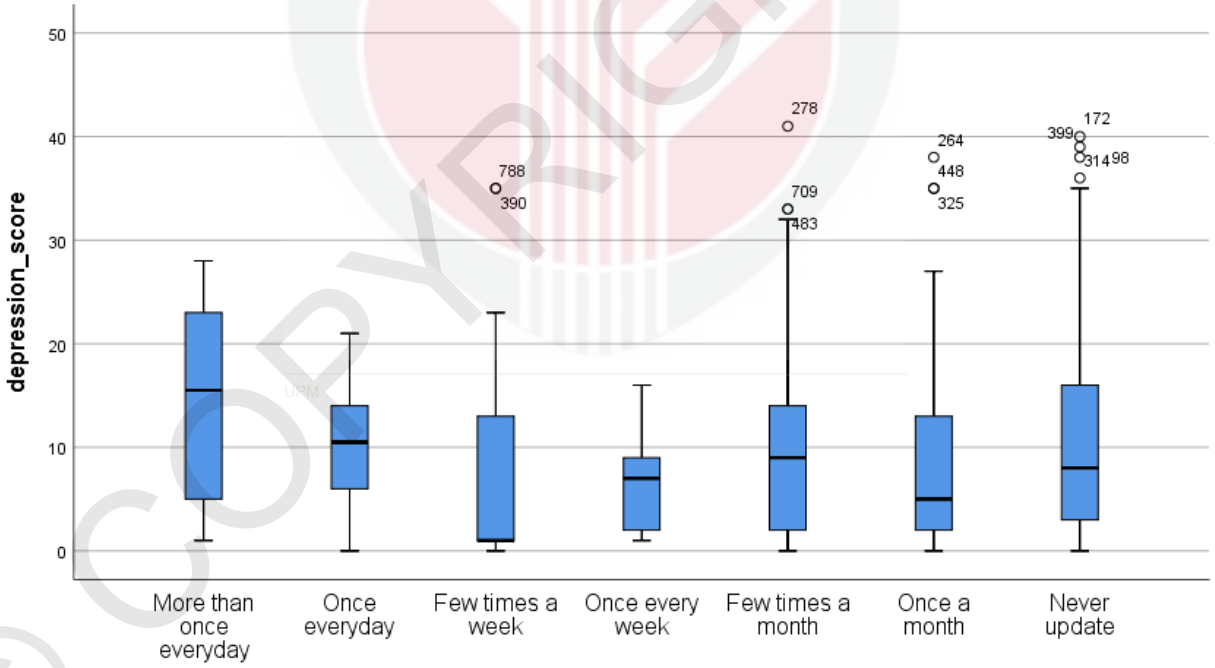

4. How often do you update on Facebook?

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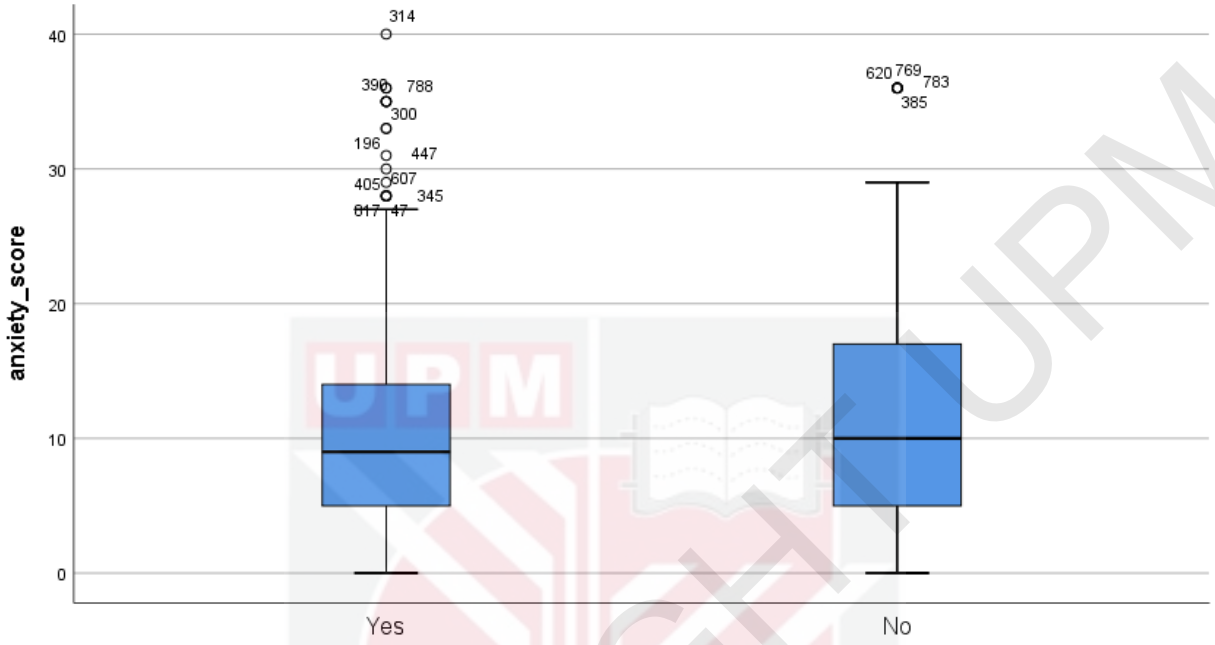
PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND ANXIETY AMONG FEMALE RESPONDENTS



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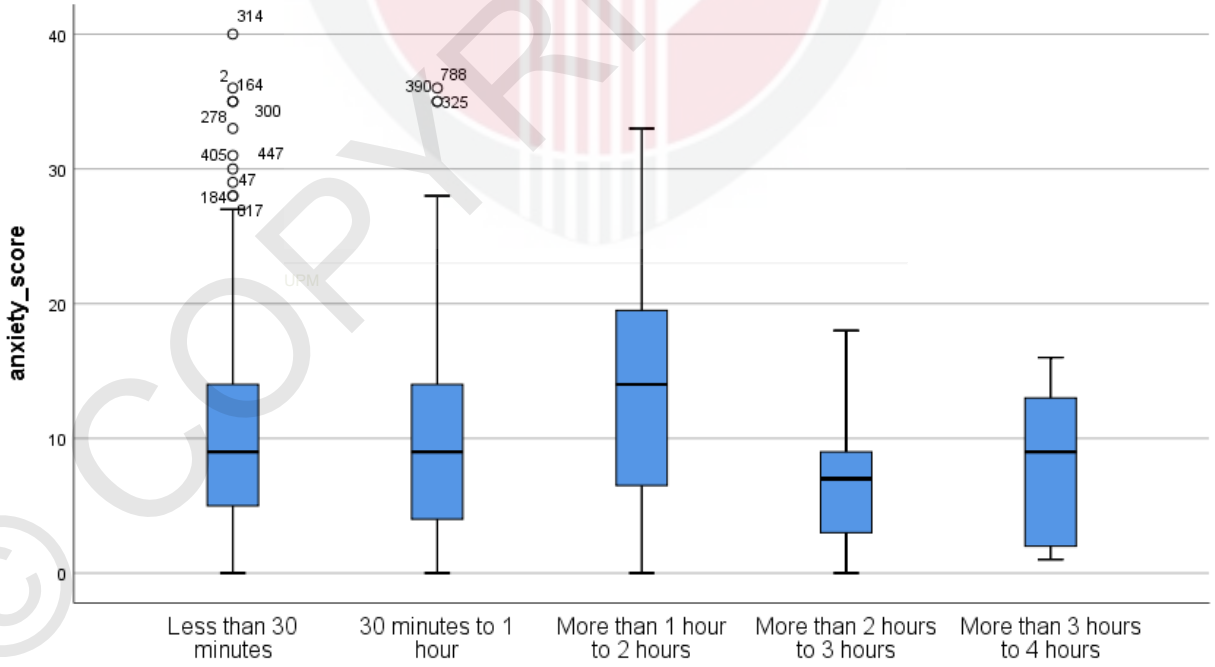

2. How much time on average do you spend on Facebook per day?

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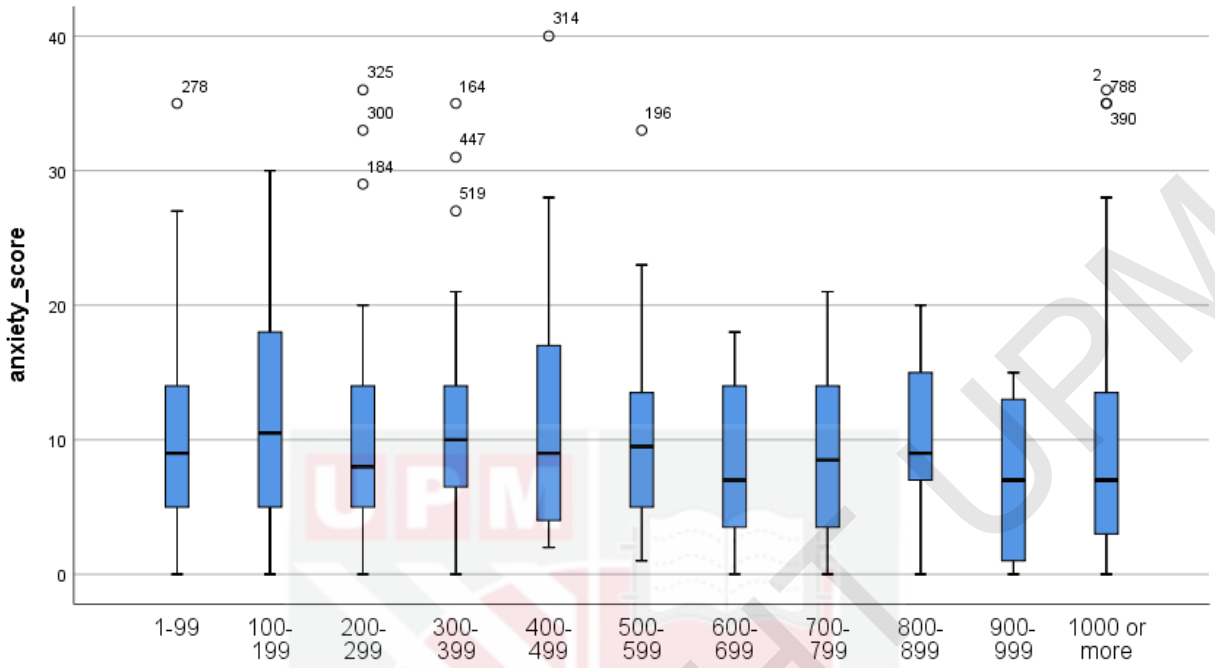

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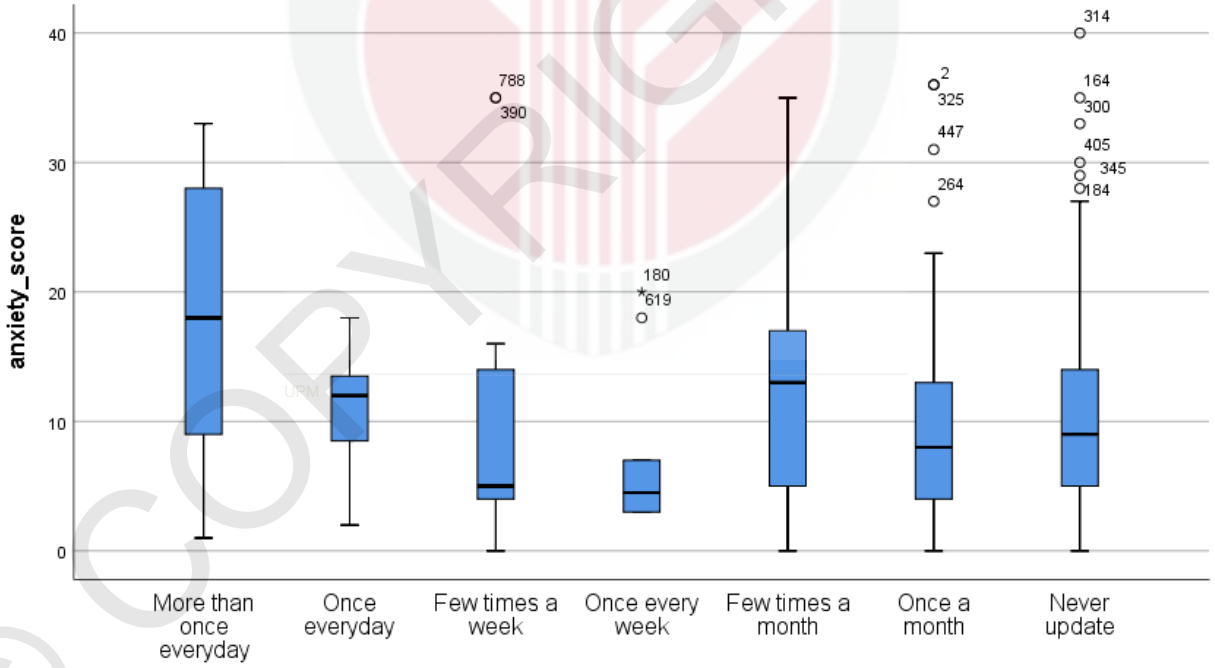

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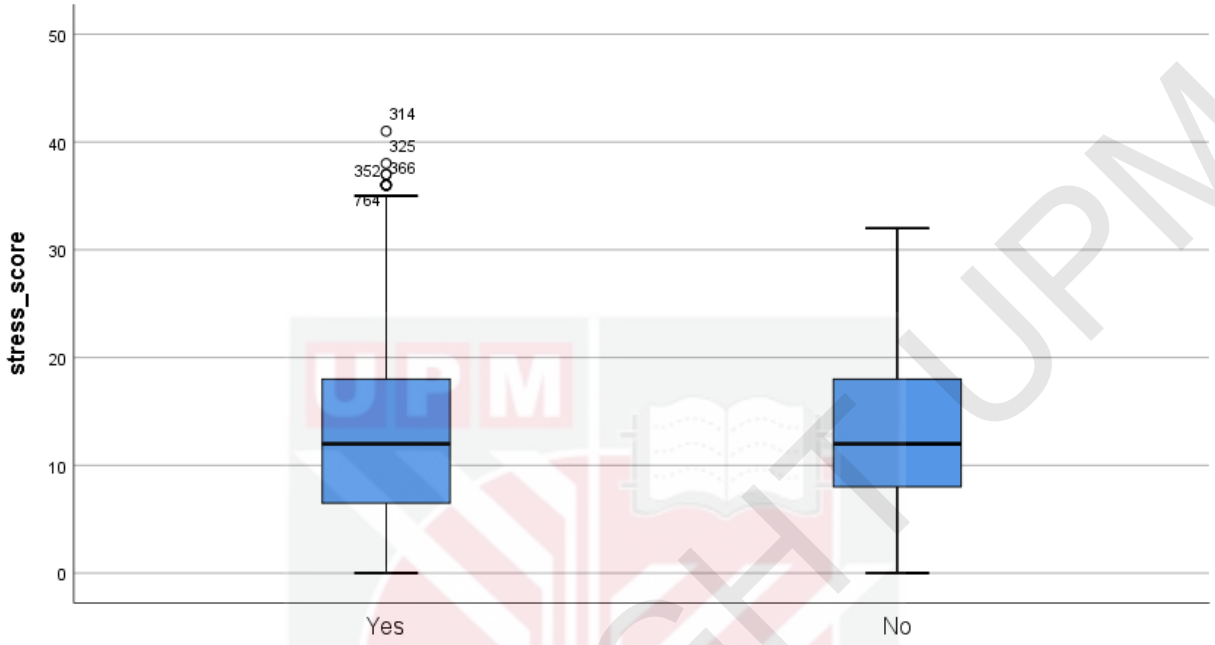
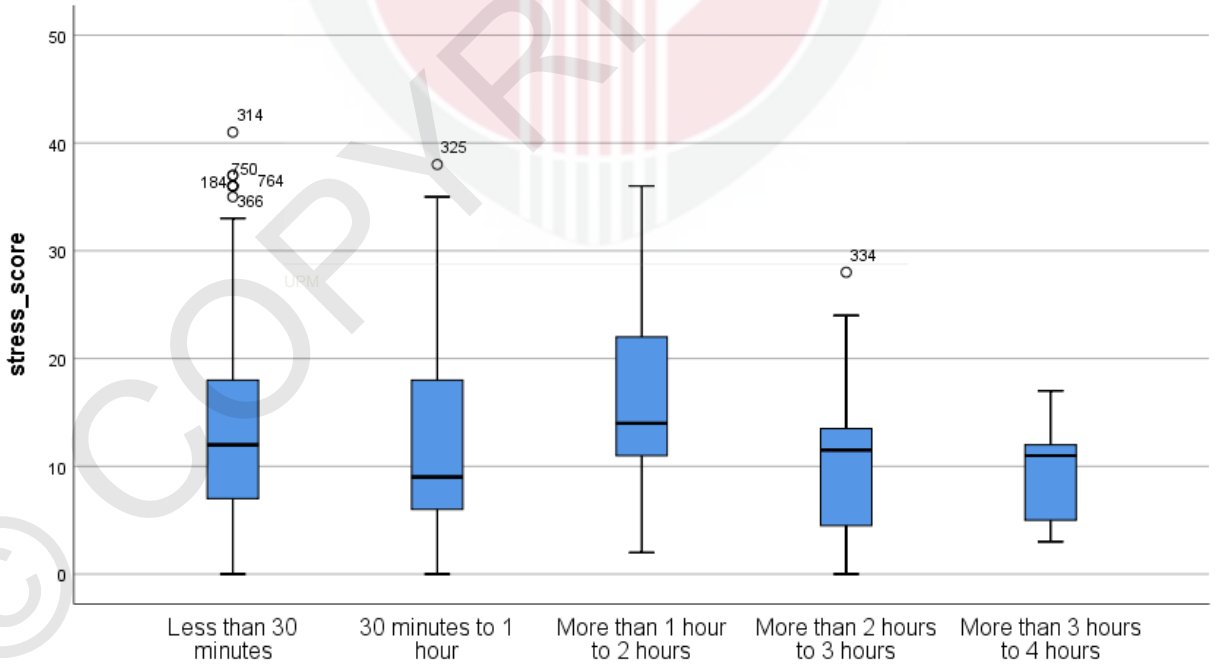
PATTERN OF RELATIONSHIP BETWEEN FACEBOOK USAGE AND STRESS AMONG FEMALE RESPONDENTS



1. Do you have a Facebook account? If 1, you may skip the questions below and move straight to Question 5.



2. How much time on average do you spend on Facebook per day?

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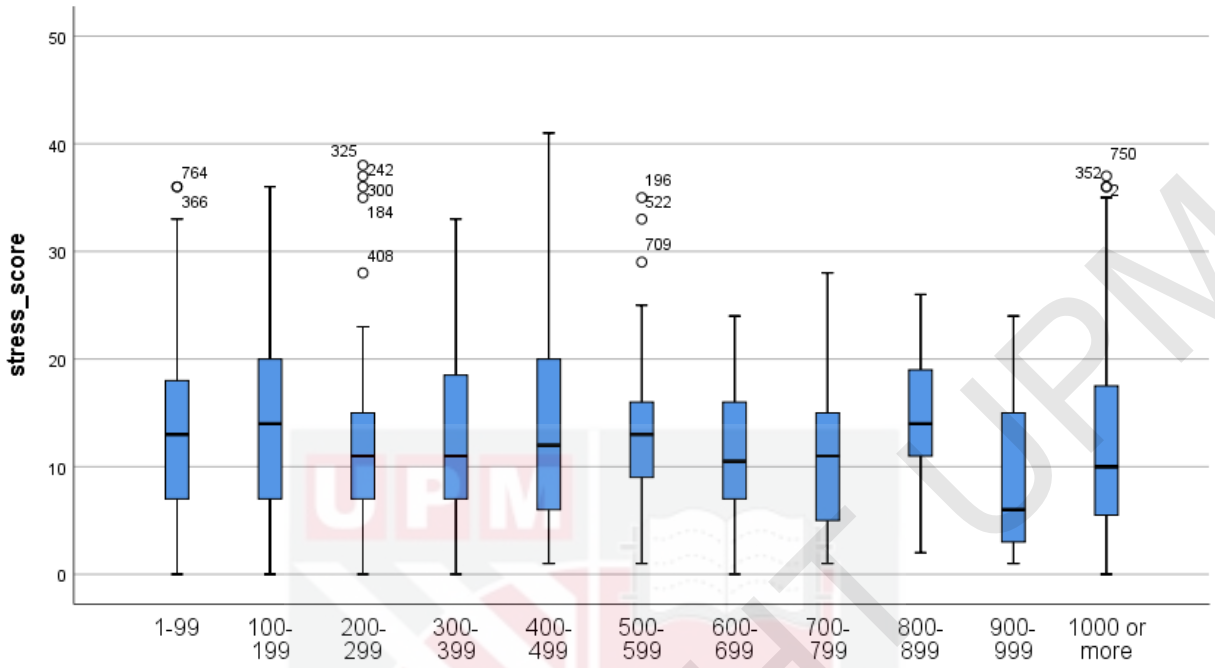
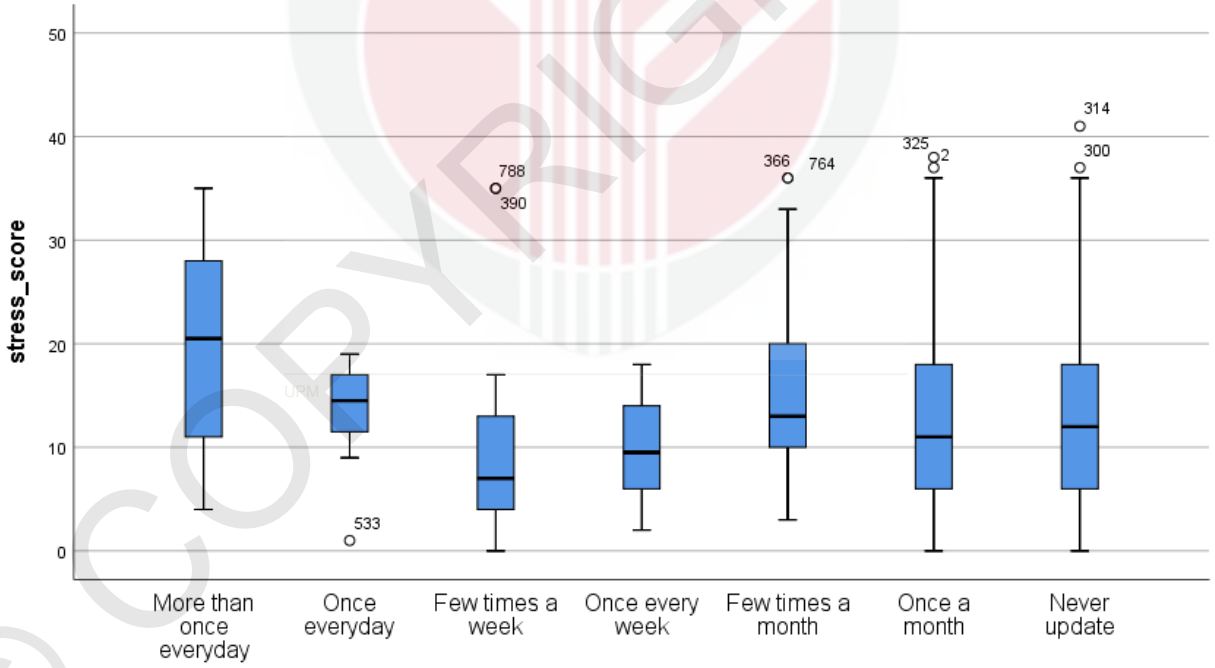


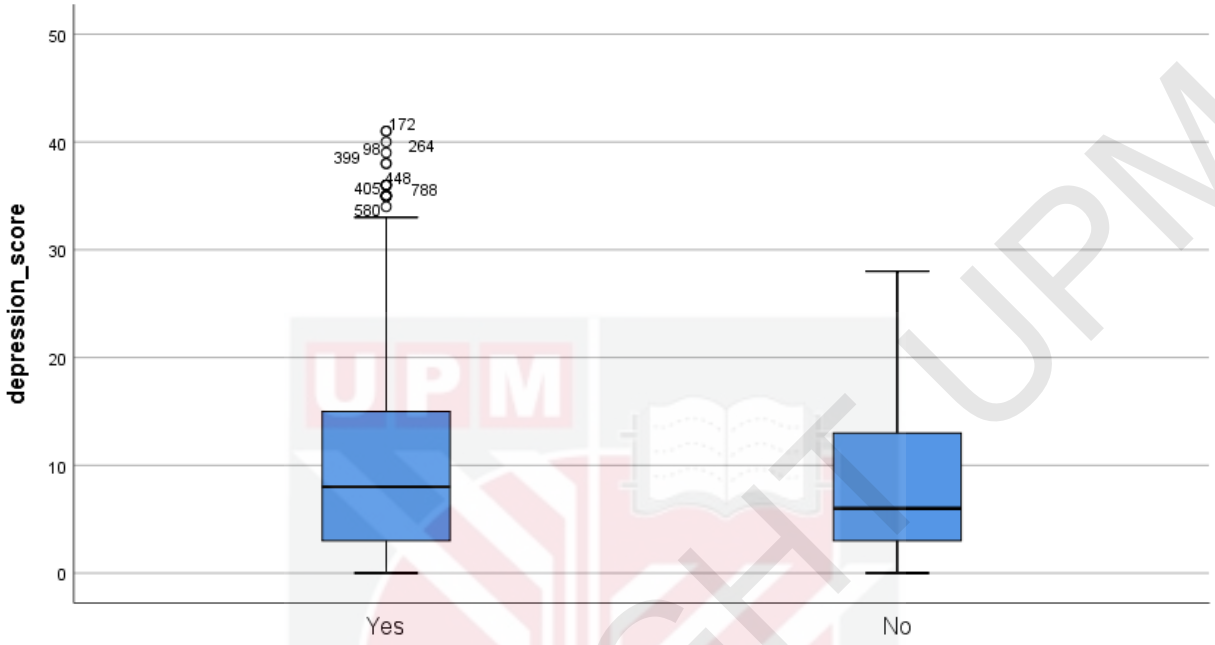
3. How many friends do you have on Facebook?



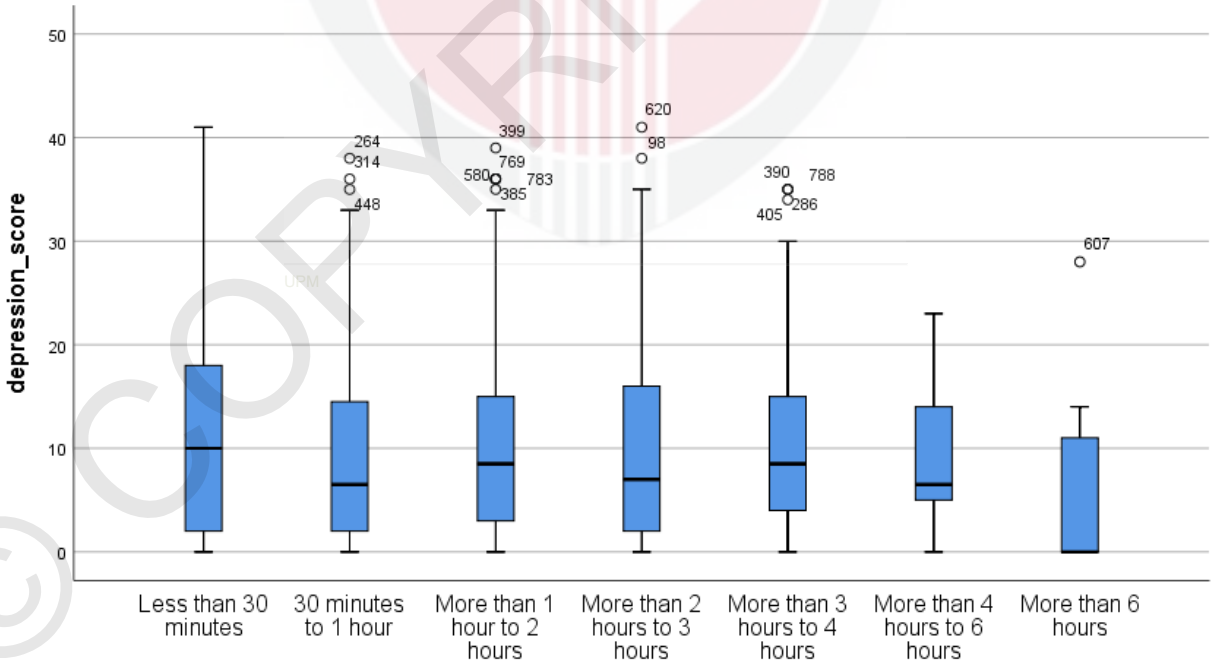
4. How often do you update on Facebook?

© COPYRIGHT UPM

PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND DEPRESSION AMONG FEMALE RESPONDENTS



5. Do you have a Instagram account? If 1, you may skip the questions below and move straight to Question 10.



6. How much time on average do you spend on Instagram per day?

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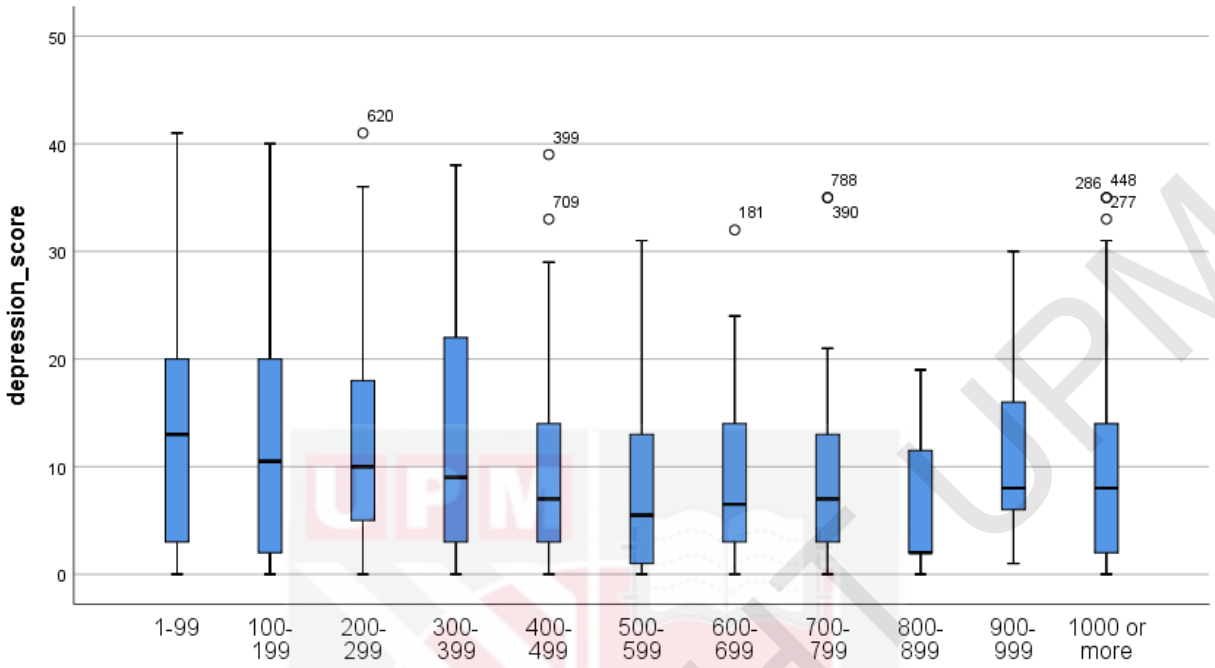
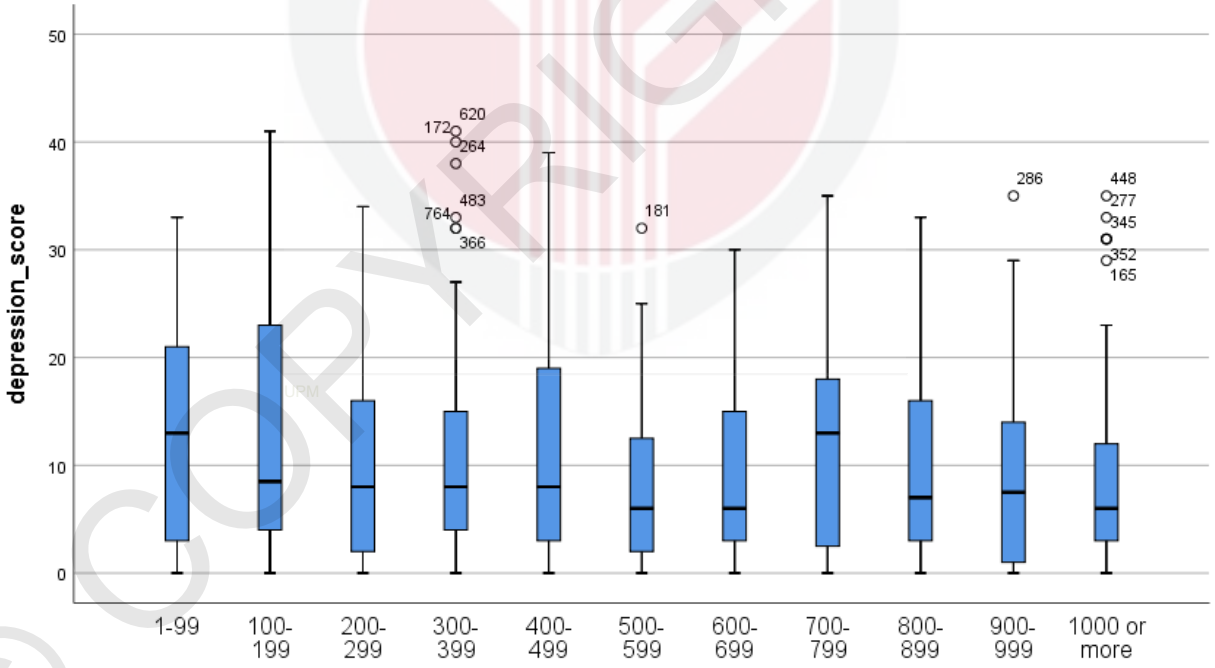


7. How many followers do you have on Instagram?



8. How many people are you following on Instagram?

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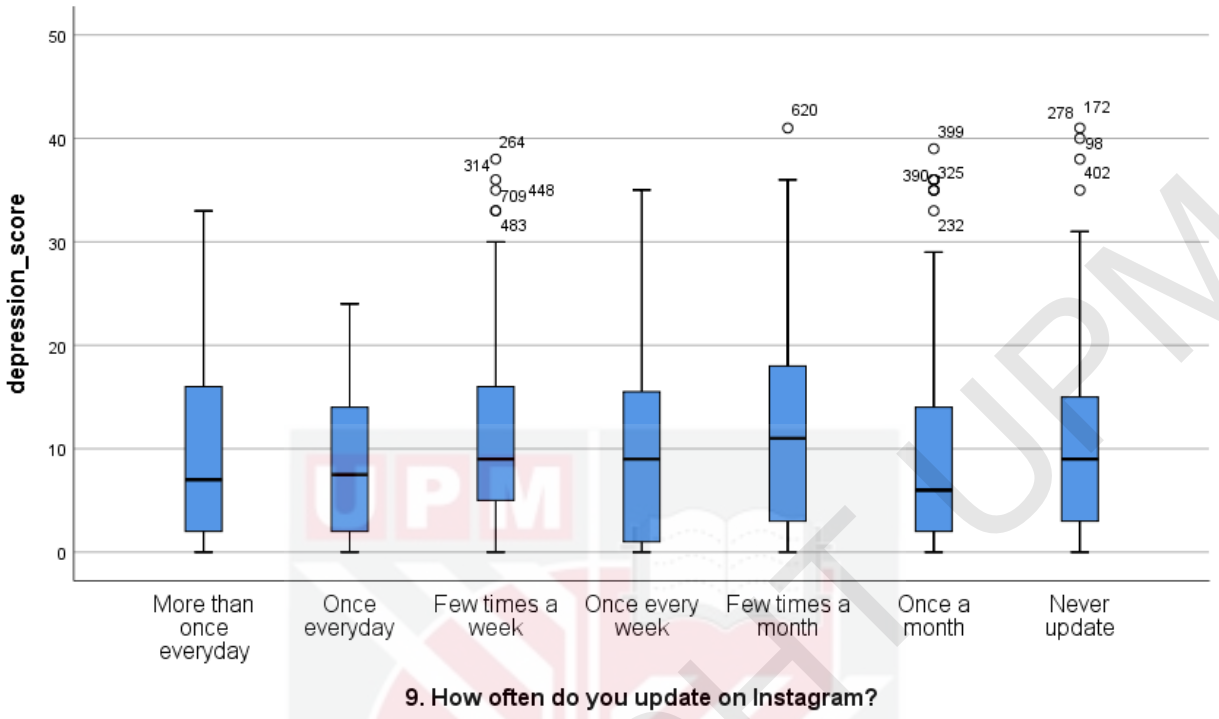
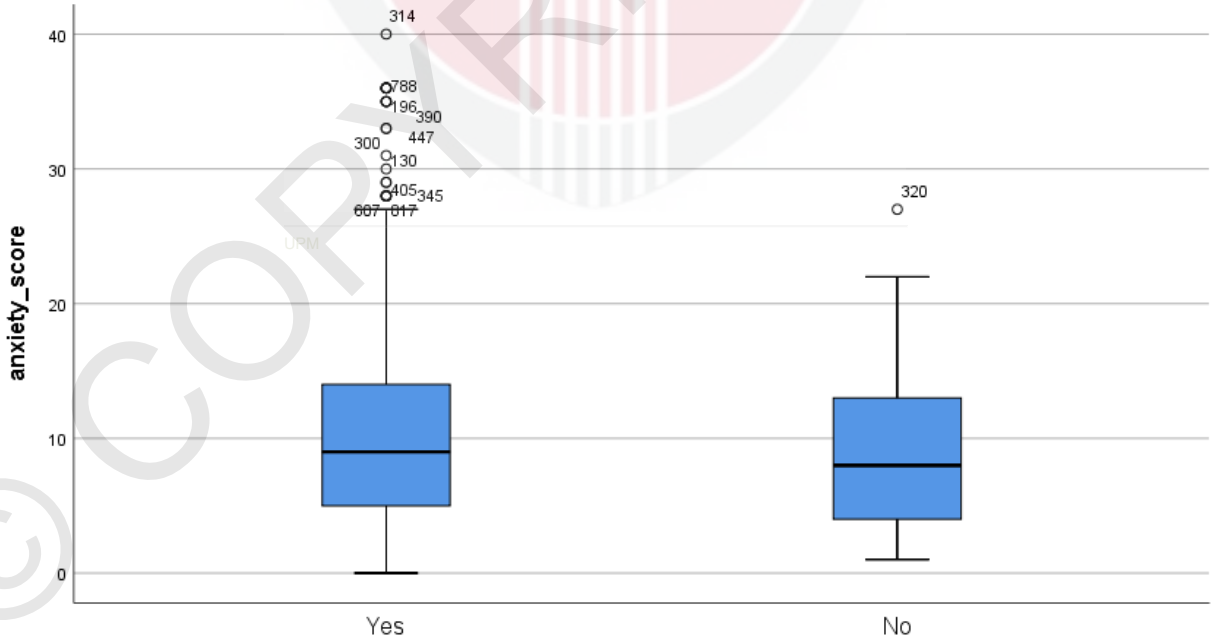


9. How often do you update on Instagram?

PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND ANXIETY AMONG FEMALE RESPONDENTS



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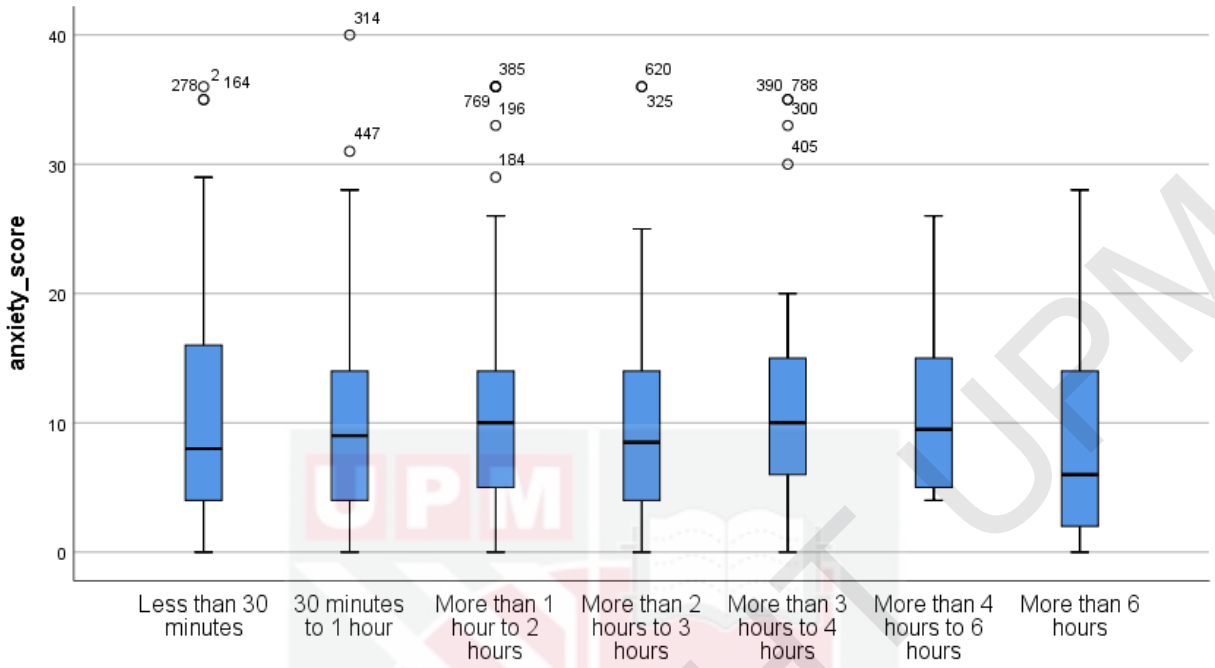
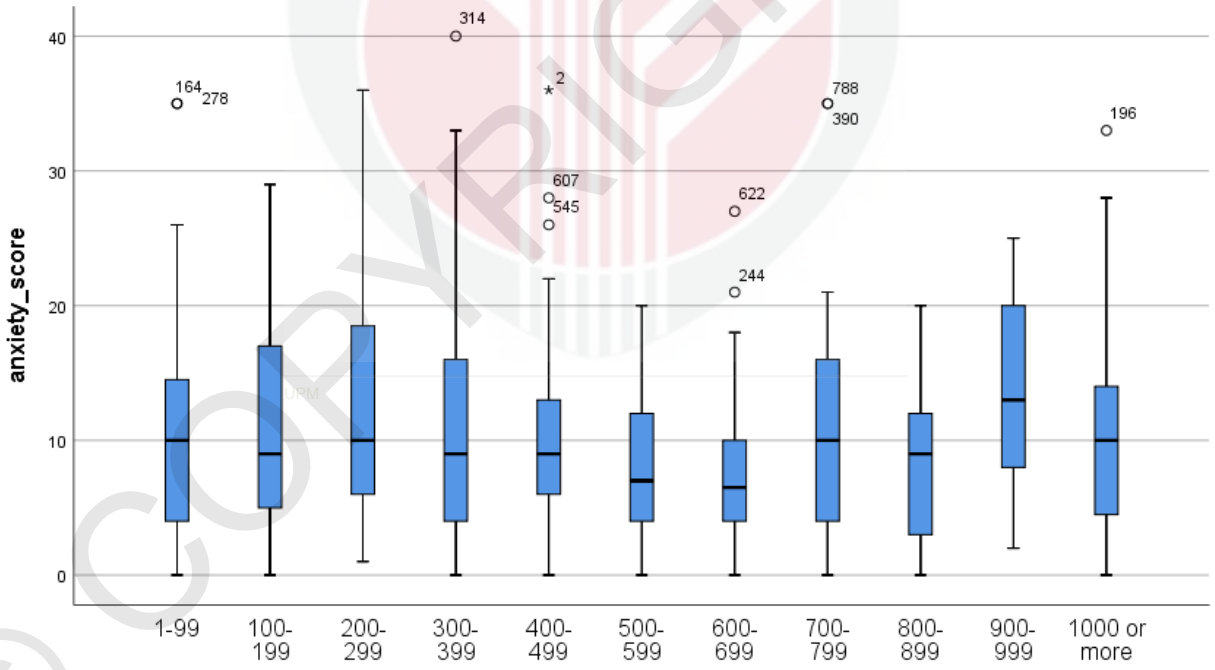
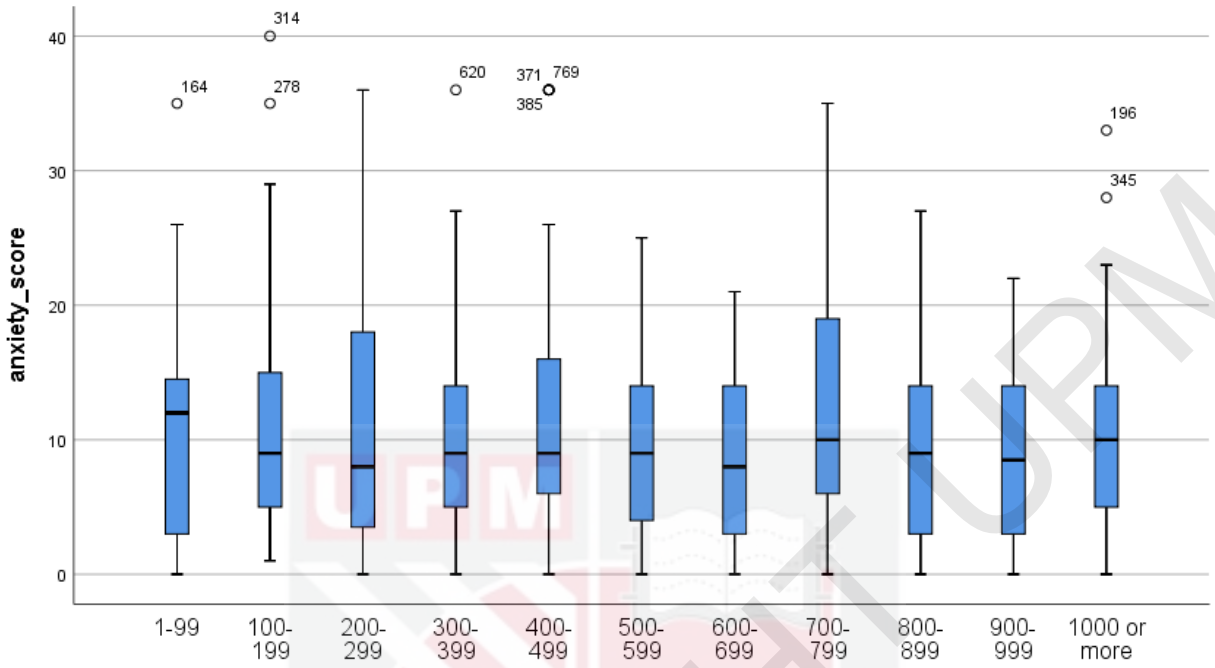


6. How much time on average do you spend on Instagram per day?

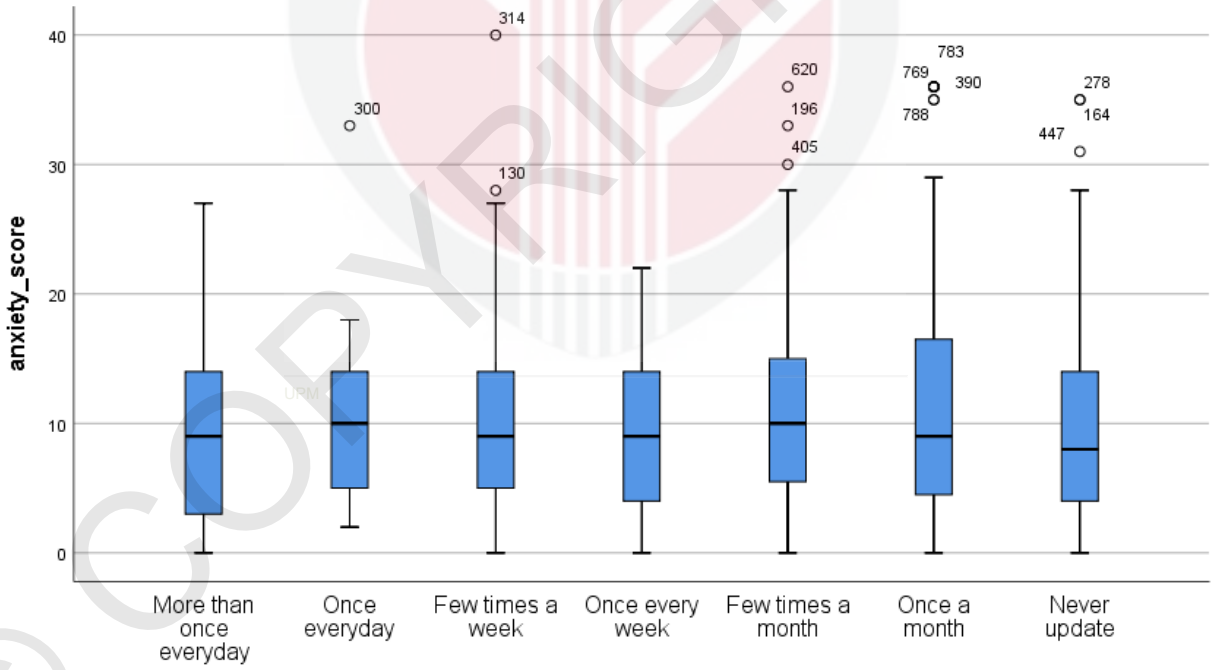


7. How many followers do you have on Instagram?

© COPYRIGHT UPM



8. How many people are you following on Instagram?



9. How often do you update on Instagram?

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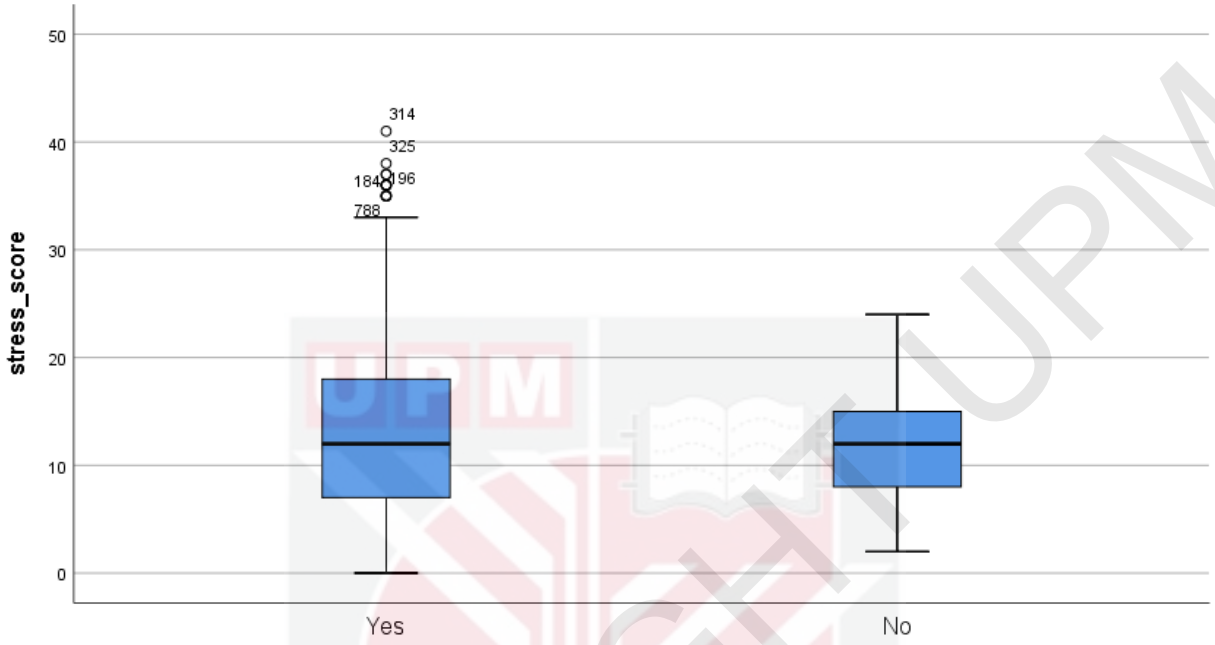
PATTERN OF RELATIONSHIP BETWEEN INSTAGRAM USAGE AND STRESS AMONG FEMALE RESPONDENTS



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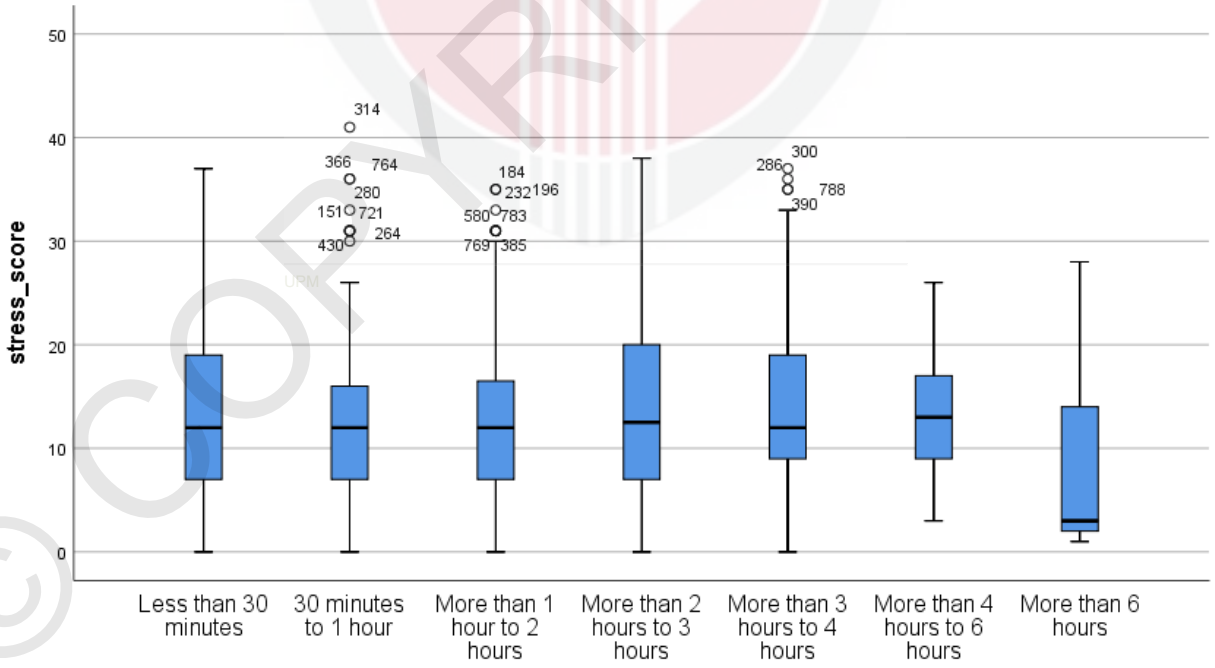
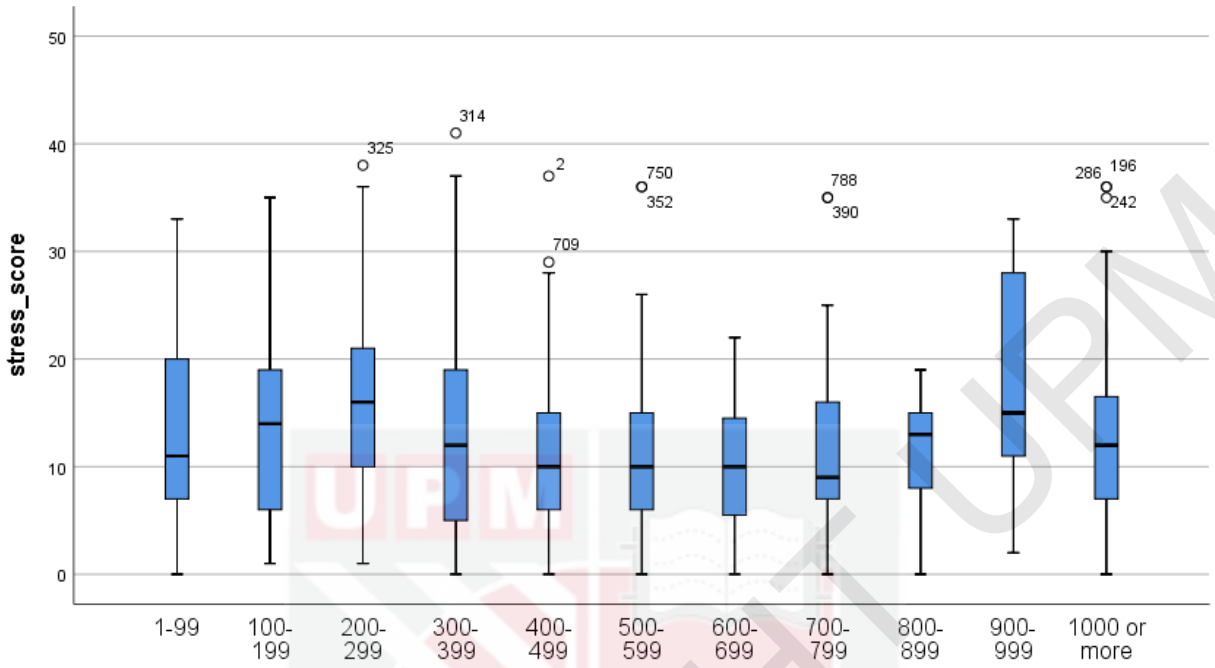
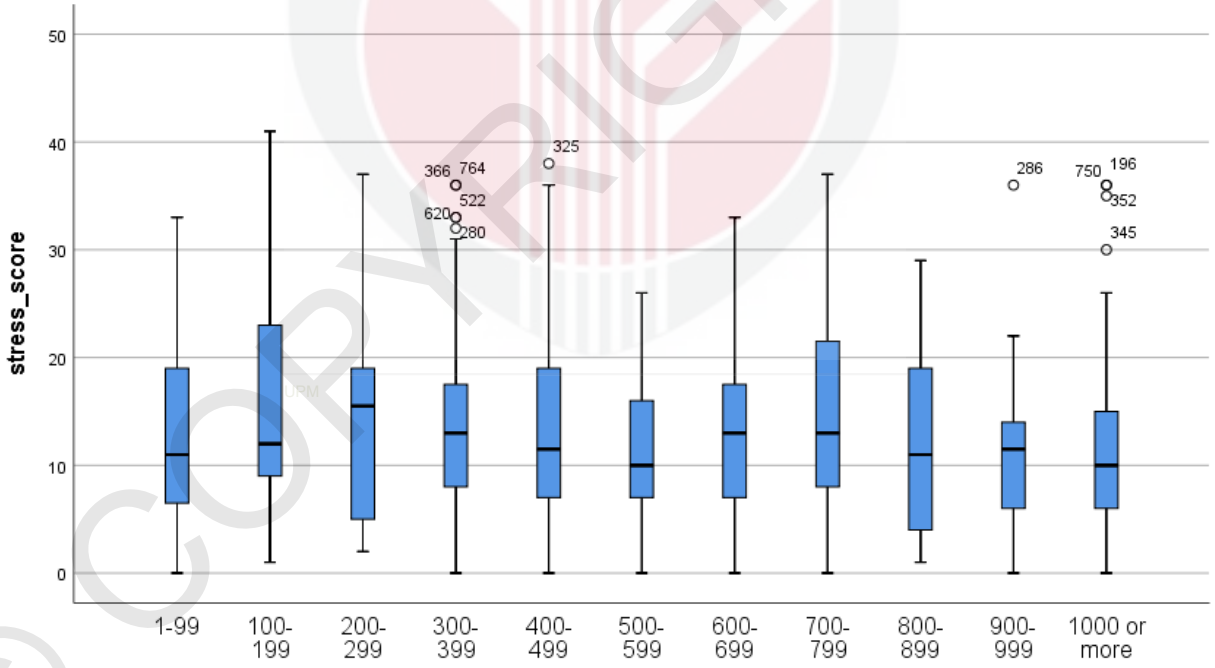


6. How much time on average do you spend on Instagram per day?

© COPYRIGHT UPM



7. How many followers do you have on Instagram?



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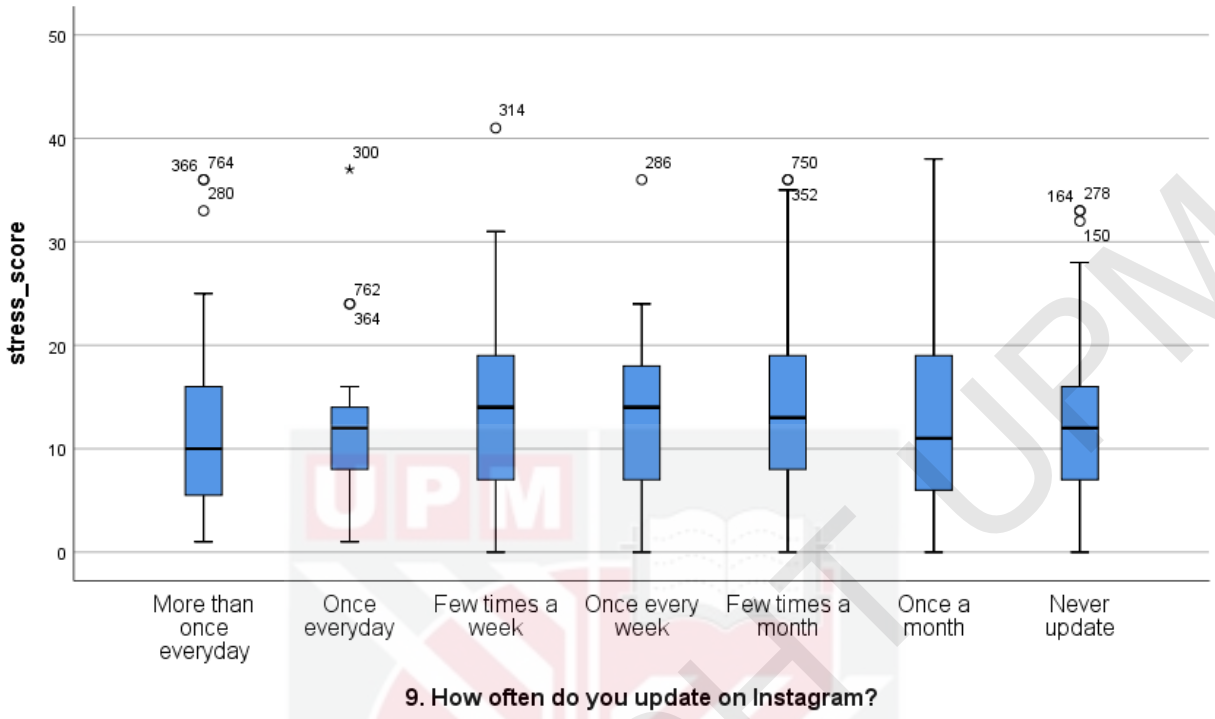
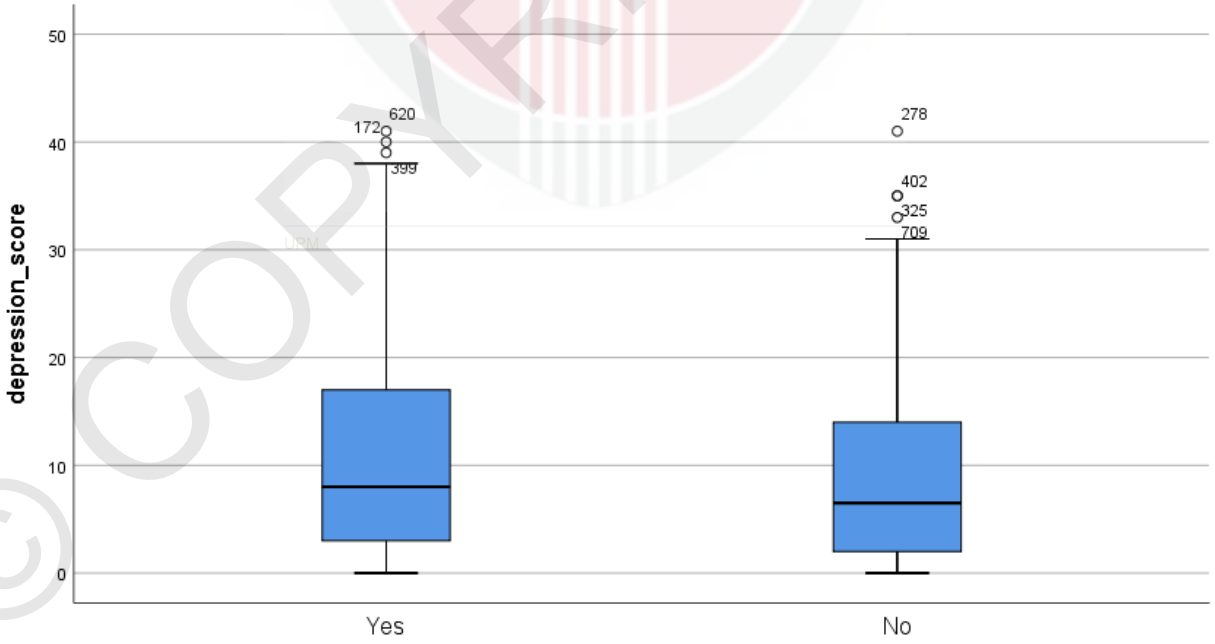
© COPYRIGHT UPM



9. How often do you update on Instagram?

PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND DEPRESSION AMONG FEMALE RESPONDENTS



10. Do you have a Twitter account? If 1, you may skip the questions below and move to the next section (DASS-42 Section).

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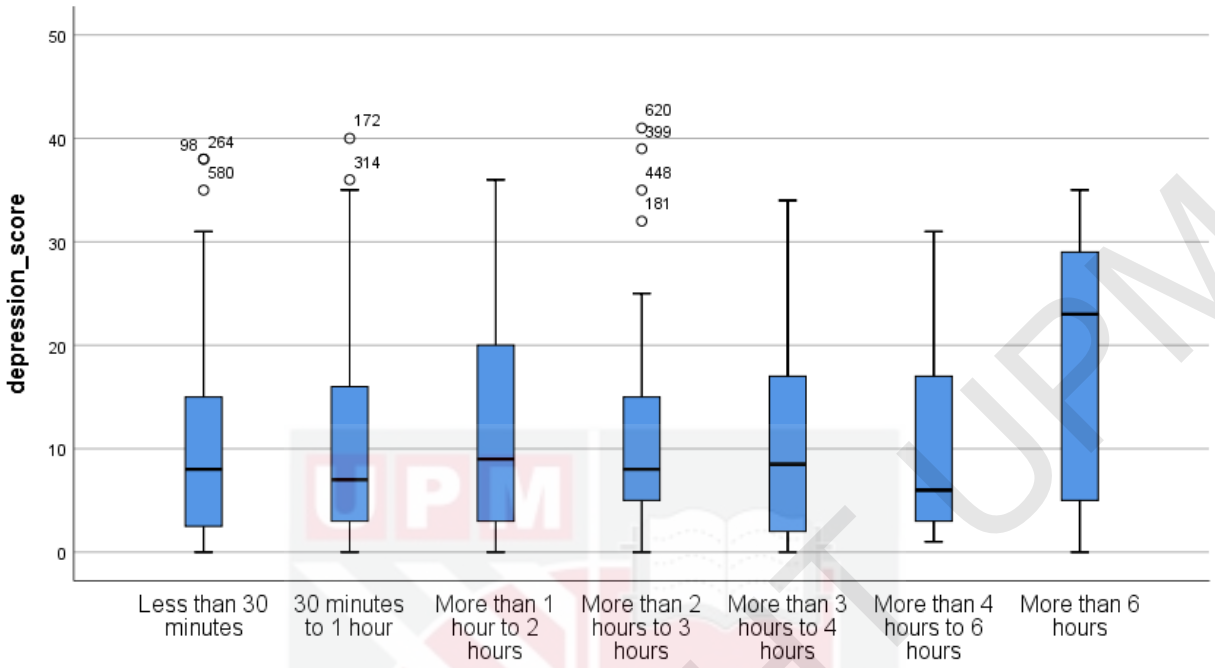
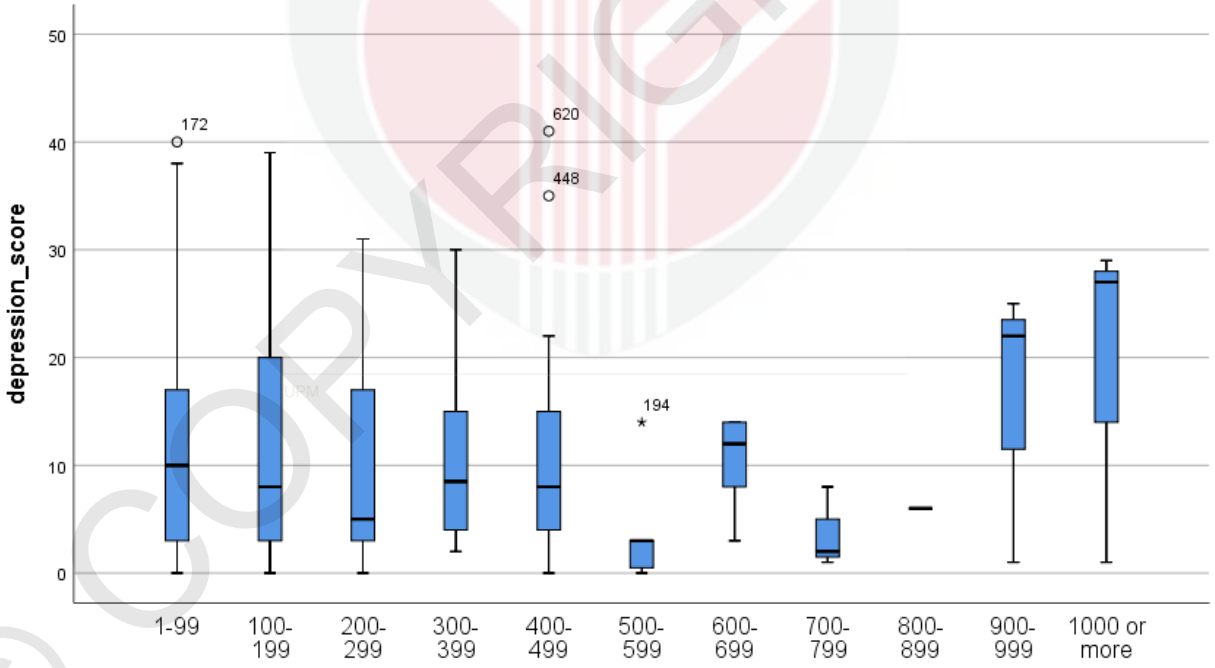


11. How much time on average do you spend on Twitter per day?



12. How many followers do you have on Twitter?

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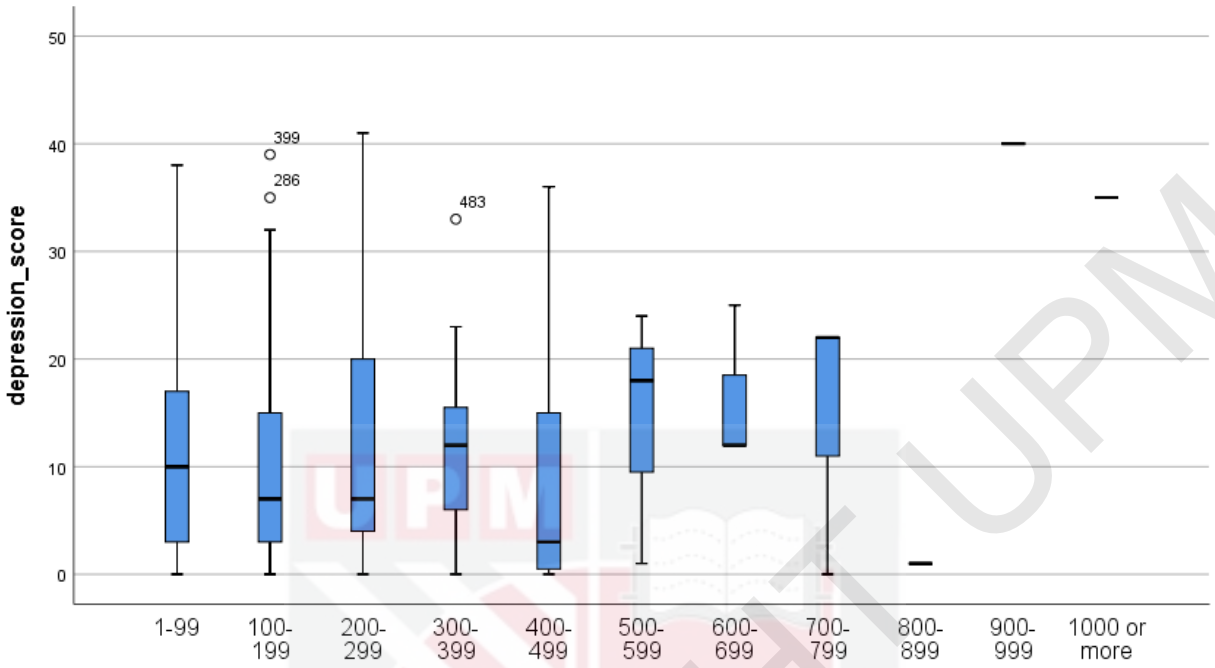
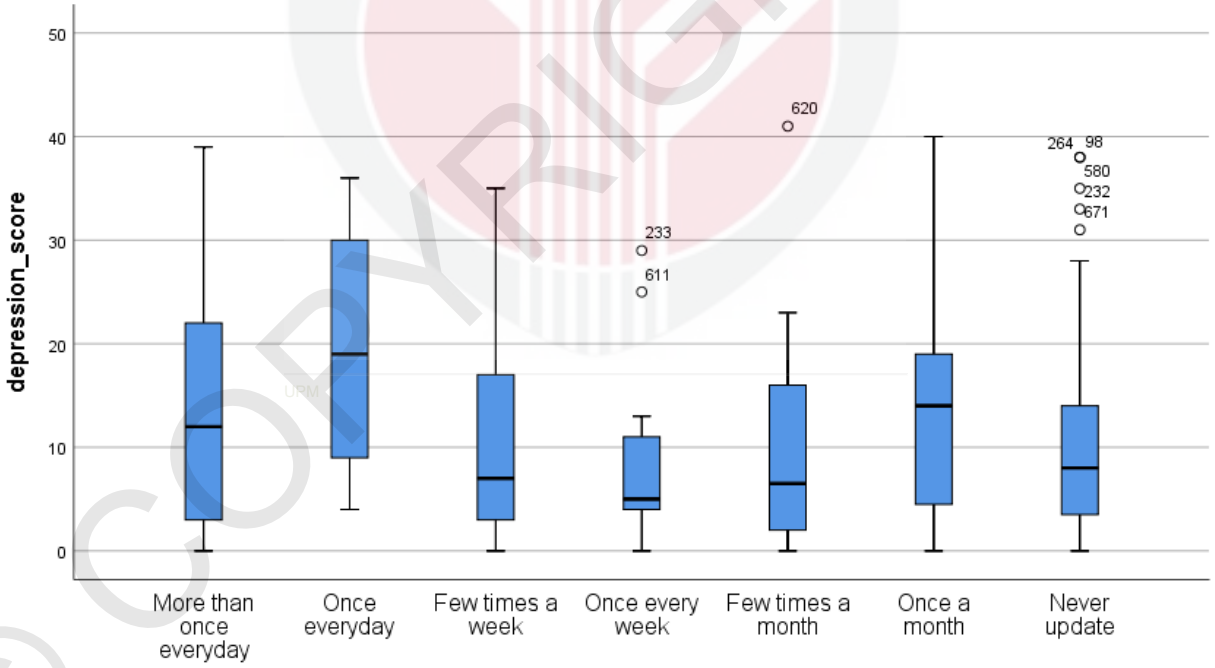


13. How many account do you follow on Twitter?



14. How often do you update on Twitter?

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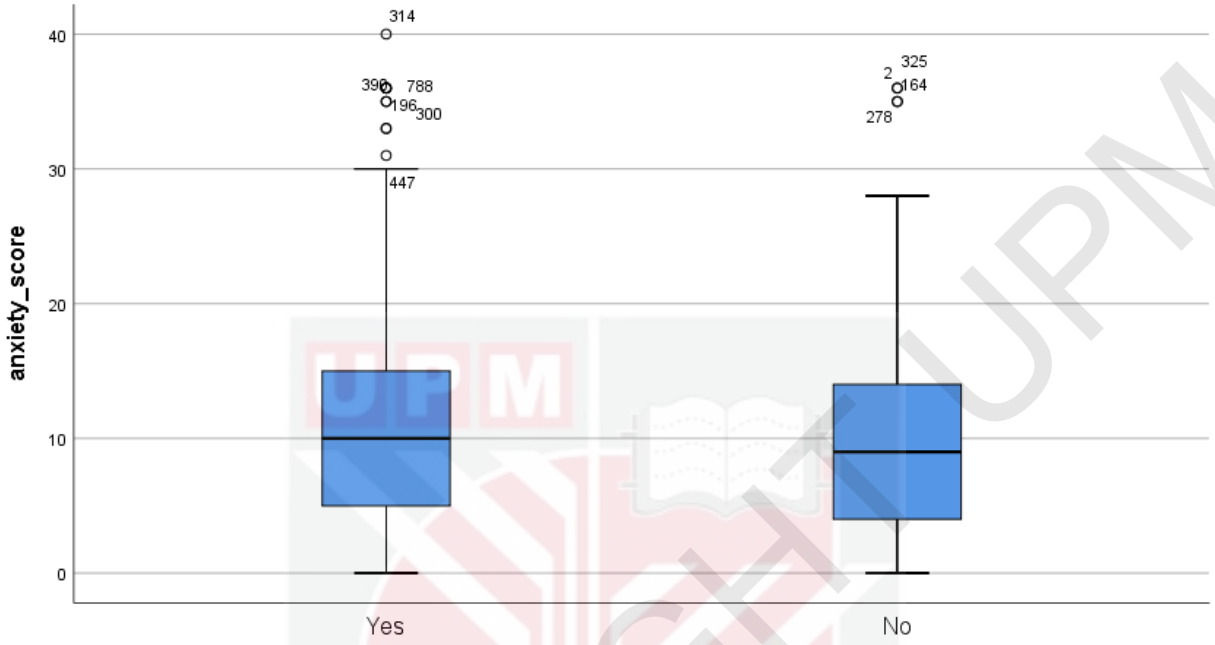
PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND ANXIETY AMONG FEMALE RESPONDENTS



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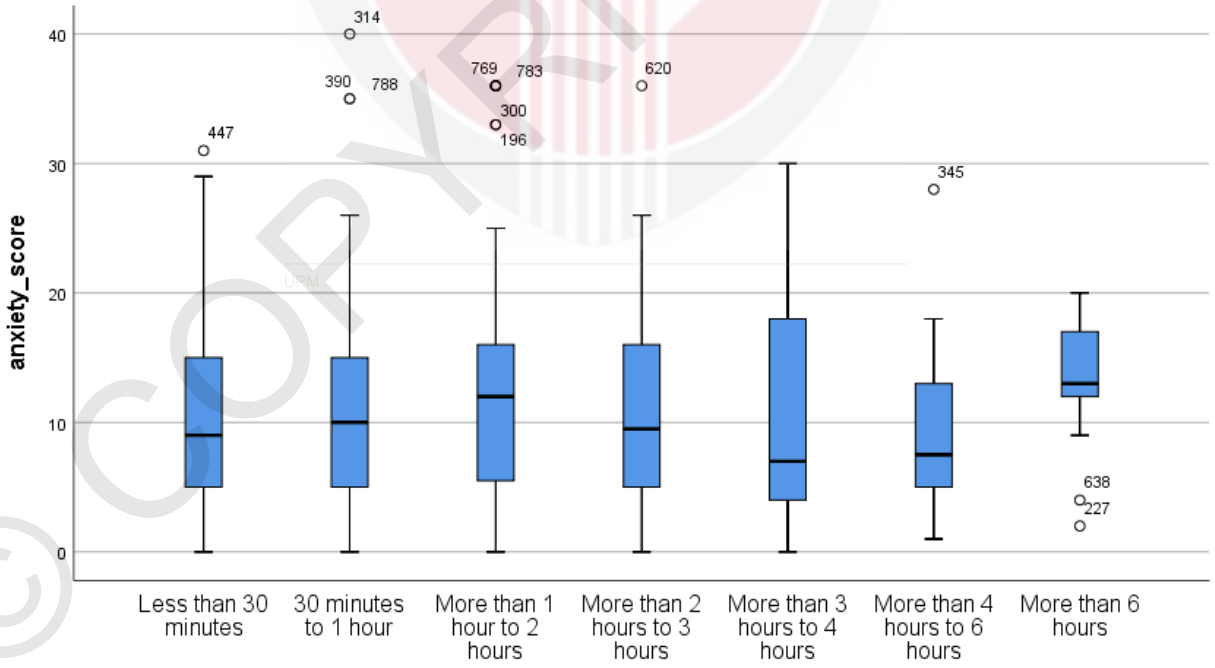

11. How much time on average do you spend on Twitter per day?

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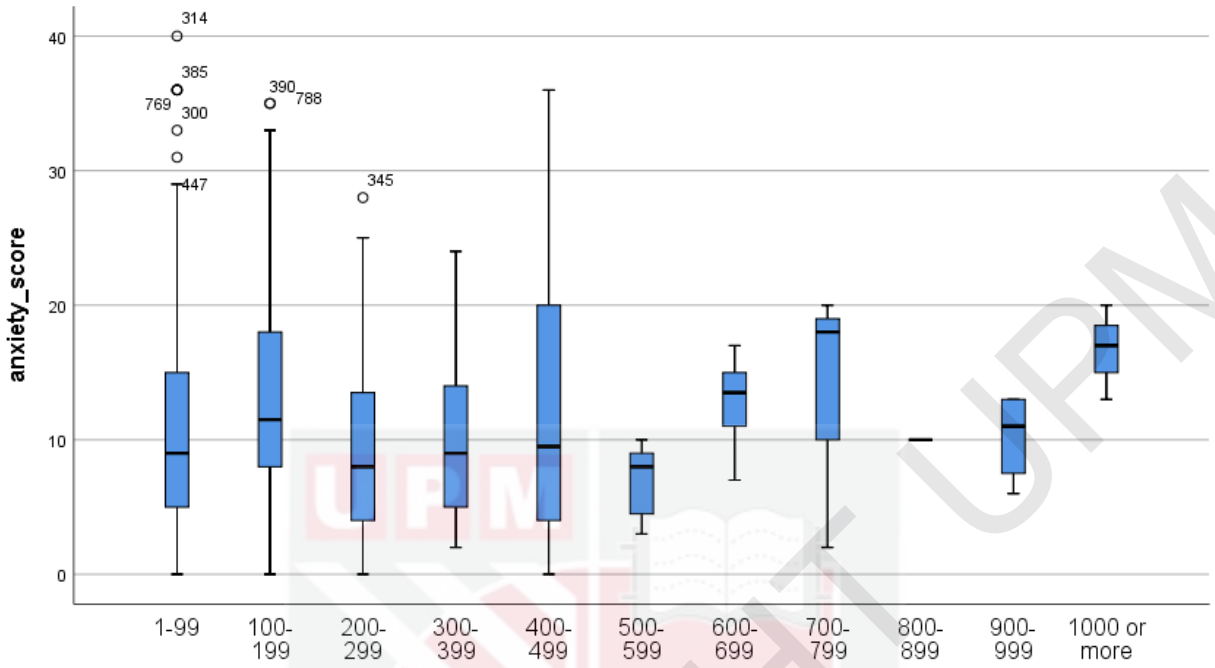
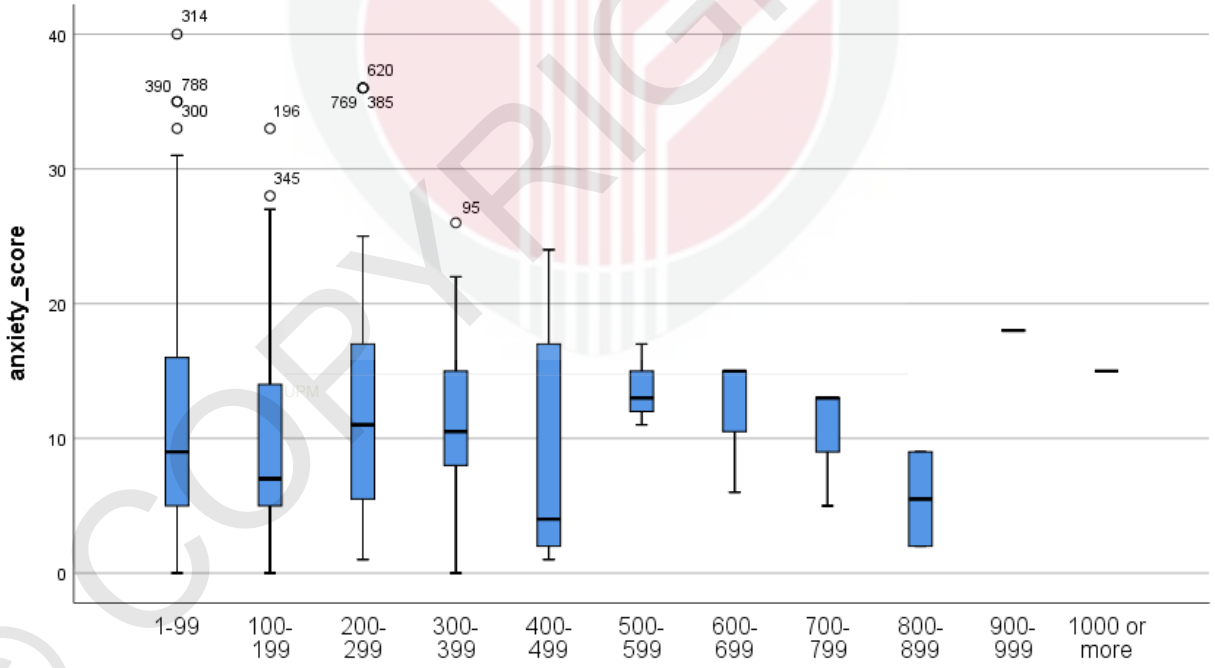


12. How many followers do you have on Twitter?



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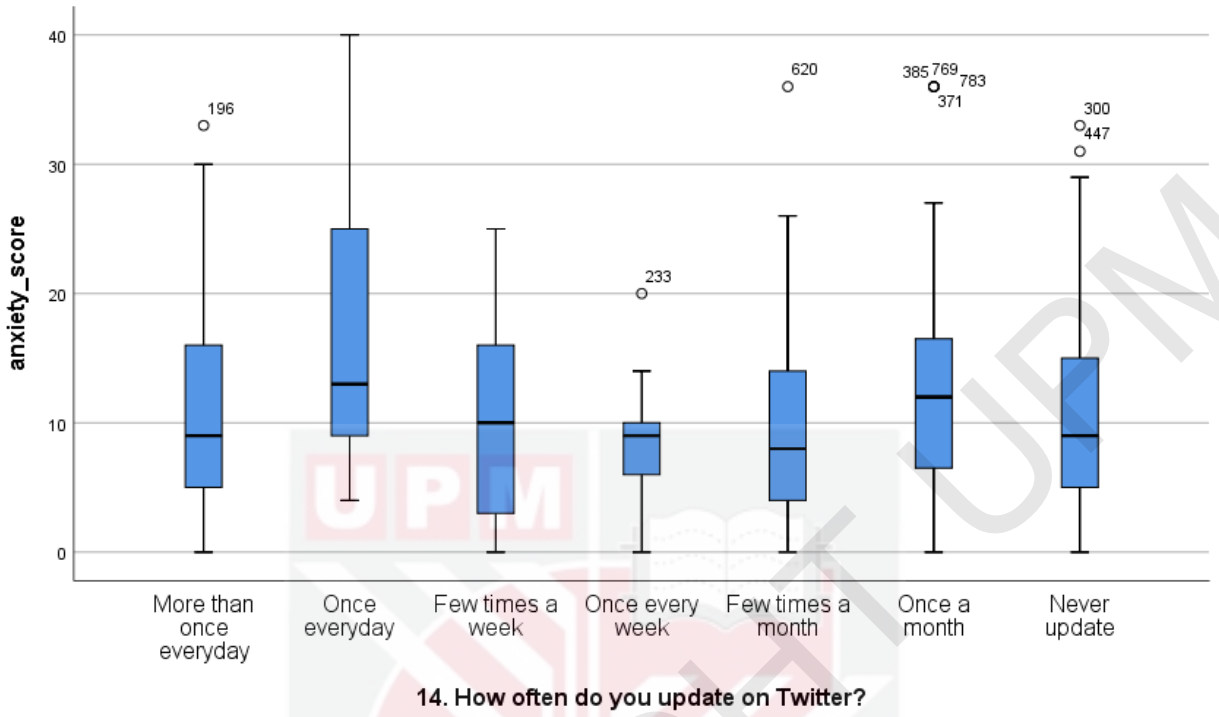
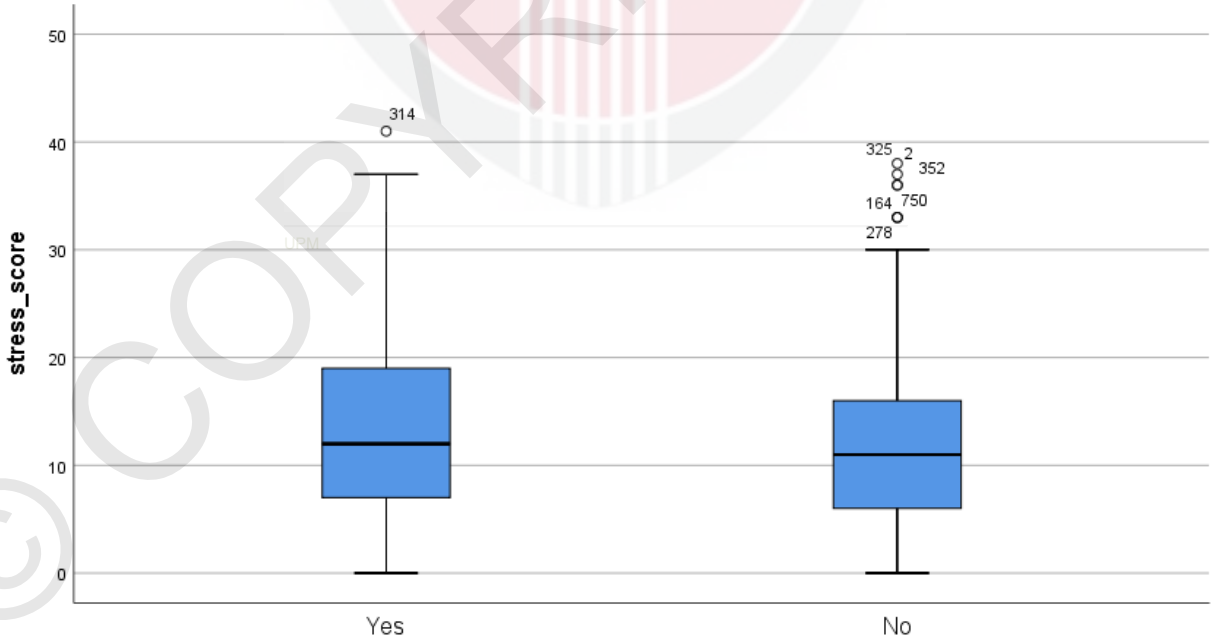
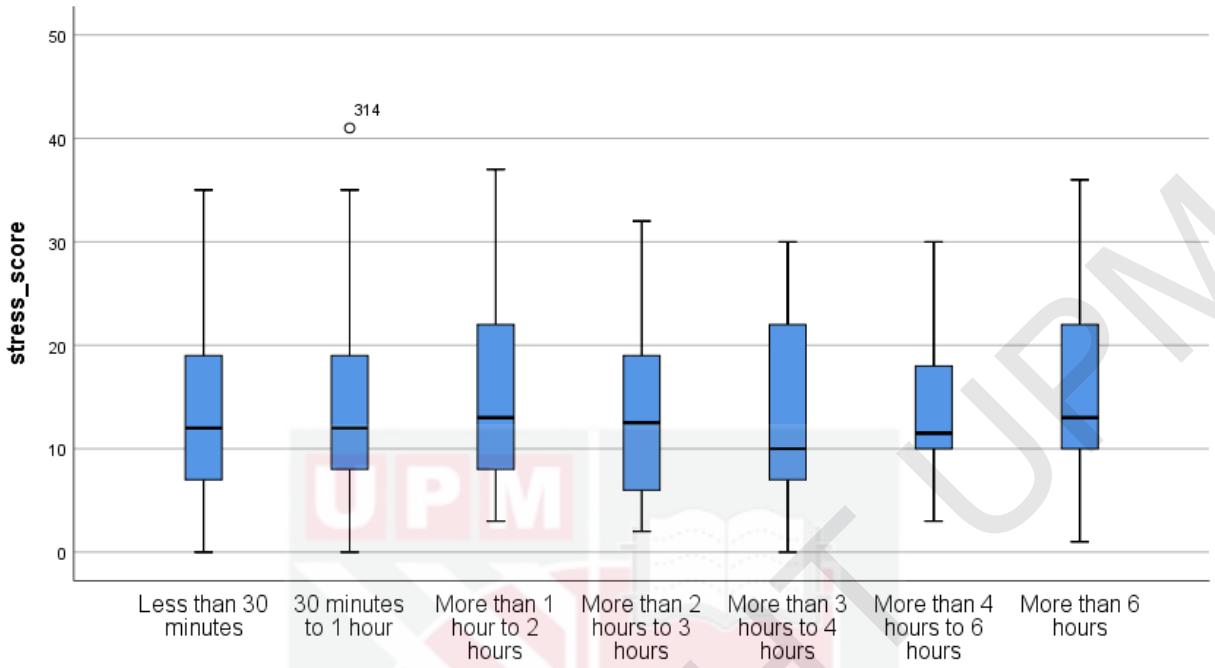


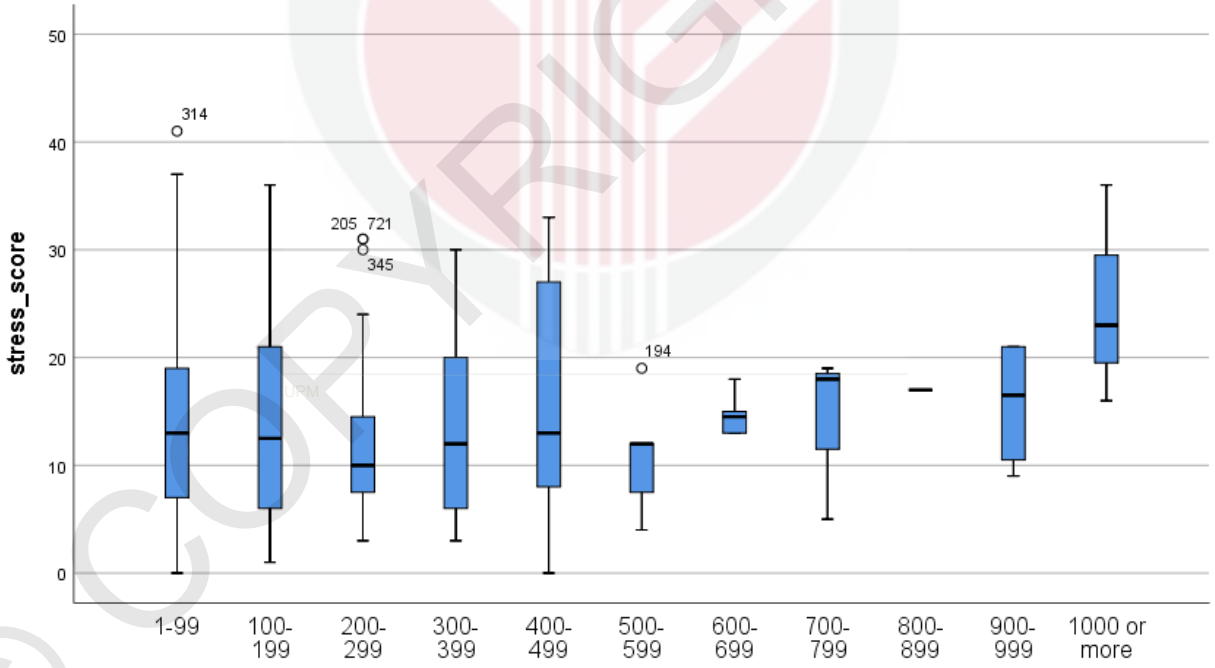
PATTERN OF RELATIONSHIP BETWEEN TWITTER USAGE AND STRESS AMONG FEMALE RESPONDENTS



© COPYRIGHT UPM



11. How much time on average do you spend on Twitter per day?



12. How many followers do you have on Twitter?

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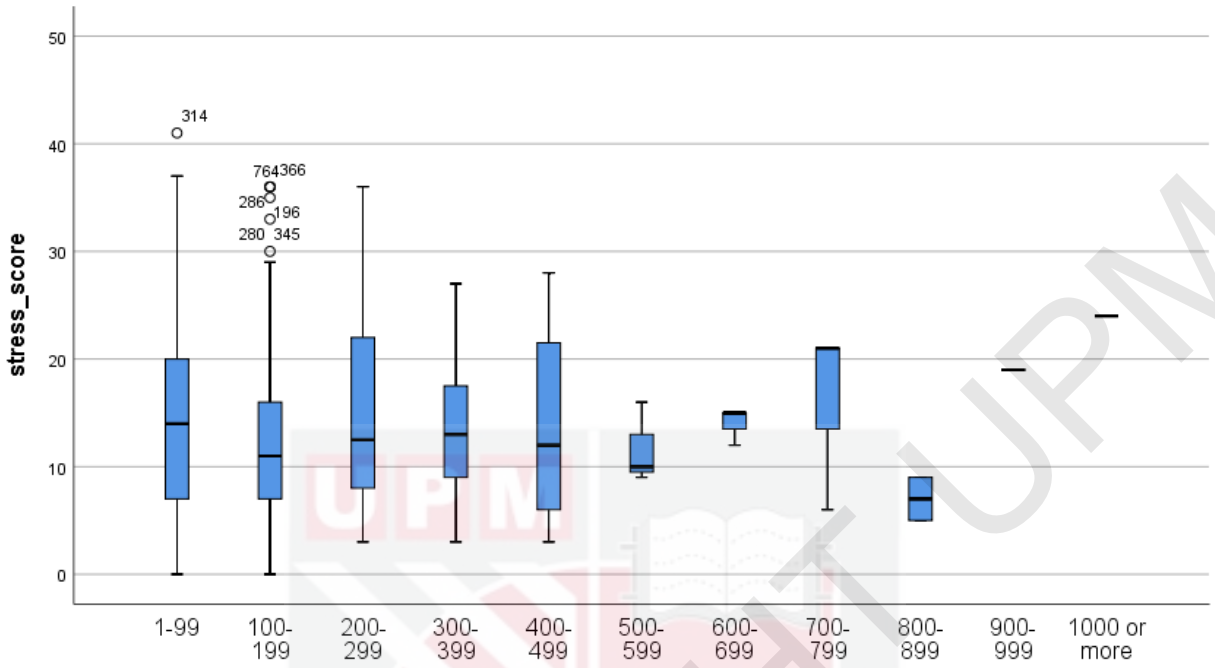

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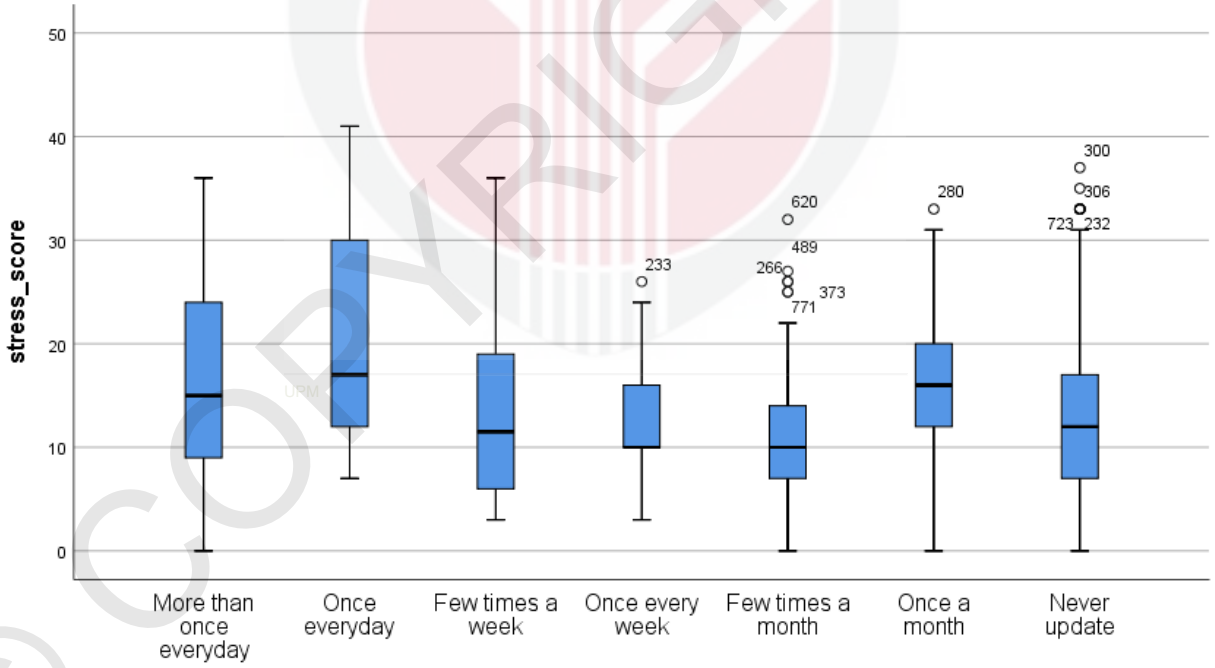

14. How often do you update on Twitter?

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APPENDIX D - RESPONDENT INFORMATION SHEET

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

FORM 2.4: RESPONDENT'S INFORMATION SHEET AND INFORMED CONSENT FORM

Please read the following information carefully and do not hesitate to discuss any questions you may have with the researcher.

1. STUDY TITLE :

Mental Health and Social Media Use Among Universiti Putra Malaysia Undergraduate Students

2. INTRODUCTION:

Depression and related mental illnesses can have a significant impact on all facets of life, including academic results, job productivity, family and friend relationships, and the ability to engage in the community. In recent years, there has been a rise in signs of depression, anxiety, and other mental illnesses among college student populations. Nearly 70% of Americans enroll in college after high school, and about three-quarters of them have lifetime cases of psychological disorders (Lattie EG, Lipson SK and Eisenberg D ,2019). The objective of this study is to determine the prevalence of depression, anxiety and stress and its association with usage of social media among undergraduate students of Universiti Putra Malaysia.

3. WHAT WILL YOU HAVE TO DO?

Please fill up all the questions provided and return it to the researchers. All the answers given are confidential and will be private.

4. WHO SHOULD NOT PARTICIPATE IN THE STUDY?

- Students that are unwell and unreachable
- Postgraduate students
- Foundation studies (Asasi) students

5. WHAT WILL BE THE BENEFITS OF THE STUDY:

(a) TO YOU AS THE SUBJECT?

This research will give information about the prevalence of depression, anxiety and stress among undergraduate students of UPM.

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(b) TO THE INVESTIGATOR?

To determine the association between usage of social media and depression, anxiety and stress among undergraduate students of UPM.

6. WHAT ARE THE POSSIBLE RISKS?

There will be no possible risks nor harm to the respondent as the information given is private and will be kept confidential. The result obtained from this research will be used for good purposes only.

7. WILL THE INFORMATION THAT YOU PROVIDE AND YOUR IDENTITY REMAIN CONFIDENTIAL?

All the information that is collected will remain confidential. The results will be analyzed and published in a collective form and not pointing to any individuals.

8. WHO SHOULD YOU CONTACT IF YOU HAVE ADDITIONAL QUESTIONS DURING THE COURSE OF THE RESEARCH?

- Supervisor: Dr. Ahmad Zaid Fattah bin Azman (+603-89472404)

  azfa@upm.edu.my

- Reenna Raj Rajaram (018-4619068)

  200273@student.upm.edu.my

- Gan Woon Rie (011-26632883)

  200505@student.upm.edu.my

- Nurul Iman Sofea binti Suhaimi (013-2595358)

  200558@student.upm.edu.my

*Please initial here if you have read and understood the contents of this page*_____

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9. CONSENT

I …… Identity Card No. …… address……...

……..hereby voluntarily agree to take part in the research stated above *(clinical /drug trial/video recording/ focus group/interview-based/ questionnaire-based).

I have been informed about the nature of the research in terms of methodology, possible adverse effects and complications (as written in the Respondent's Information Sheet). I understand that I have the right to withdraw from this research at any time without giving any reason whatsoever. I also understand that this study is confidential and all information provided with regard to my identity will remain private and confidential.

I* wish / do not wish to know the results related to my participation in the research

I agree/do not agree that the images/photos/video recordings/voice recordings related to me be used in any form of publication or presentation (if applicable)

* delete where necessary

Signature ……..…… Signature ……..…….
(Respondent) (Witness)

Date :…….. Name :……..…..

I/C No. :……..…..

I confirm that I have explained to the respondent the nature and purpose of the above-mentioned research.

Date ……..…… Signature ……..…….
(Researcher)

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JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG,
SELANGOR, MALAYSIA

BORANG 2.4: PENERANGAN DAN PERSETUJUAN RESPONDEN

Sila baca maklumat berikut dengan teliti. Sekiranya anda mempunyai sebarang pertanyaan, sila kemukakan kepada penyelidik.

1.TAJUK KAJIAN
Kesihatan Mental dan Penggunaan Media Sosial Di Kalangan Pelajar Sarjana Universiti Putra Malaysia.

2. PENGENALAN
Depresi dan penyakit mental yang berkaitan dapat memberi kesan yang signifikan pada semua aspek kehidupan, termasuk hasil akademik, produktivitas pekerjaan, hubungan keluarga dan rakan, dan kemampuan untuk terlibat dalam masyarakat. Dalam beberapa tahun kebelakangan ini, terdapat peningkatan tanda-tanda kemurungan, kegelisahan, dan penyakit mental lain di kalangan populasi pelajar kolej. Hampir 70% orang Amerika mendaftar di kuliah setelah sekolah menengah, dan kira-kira tiga per empat dari mereka mempunyai kes gangguan psikologi seumur hidup (Lattie EG, Lipson SK dan Eisenberg D, 2019). Objektif kajian ini adalah untuk menentukan prevalensi kemurungan, kegelisahan dan tekanan dan kaitannya dengan penggunaan media sosial di kalangan pelajar sarjana Universiti Putra Malaysia.

3. APAKAH YANG PERLU ANDA LAKUKAN?
Sila isi semua soalan yang diberikan dan kembalikan kepada penyelidik. Semua jawapan yang diberikan adalah sulit dan akan dirahsiakan.

4. SIAPA YANG TIDAK BOLEH MENYERTAI KAJIAN INI?
- Pelajar yang tidak sihat dan tidak dapat dihubungi
- Pelajar pasca siswazah
- Pelajar pengajian asas (Asasi)

5. APAKAH FAEDAH MENYERTAI KAJIAN INI?

a) KEPADA ANDA SEBAGAI PESERTA?
Penyelidikan ini akan memberi maklumat mengenai berlakunya kemurungan, kegelisahan dan tekanan di kalangan pelajar sarjana UPM.

b) KEPADA PENYELIDIK?
Untuk menentukan perkaitan antara penggunaan media sosial dan kemurungan, kegelisahan dan tekanan di kalangan pelajar sarjana UPM.

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6. ADAKAH IA BERISIKO?

Tidak akan ada kemungkinan risiko atau bahaya kepada responden kerana maklumat yang diberikan adalah rahsia dan akan dirahsiakan. Hasil yang diperoleh dari penyelidikan ini akan digunakan untuk tujuan yang baik sahaja.

7. ADAKAH MAKLUMAT DAN IDENTITI SAYA KEKAL RAHSIA?

Semua maklumat yang dikumpulkan akan dirahsiakan. Hasilnya akan dianalisis dan diterbitkan dalam bentuk kolektif dan tidak menunjukkan kepada mana-mana individu.

8. SIAPA YANG SAYA PERLU HUBUNGI SEKIRANYA SAYA MEMPUNYAI SOALAN TAMBAHAN SEMASA MENGIKUTI PENYELIDIKAN INI?

- Penyelia: Dr. Ahmad Zaid Fattah bin Azman (+603-89472404)

  azfa@upm.edu.my
- Reenna Raj Rajaram (018-4619068)

  200273@student.upm.edu.my
- Gan Woon Rie (011-26632883)

  200505@student.upm.edu.my
- Nurul Iman Sofea binti Suhaimi (013-2595358)

  200558@student.upm.edu.my

Sila tandatangan di sini sekiranya anda telah membaca dan memahami kandungan halaman ini _____

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9. PERSETUJUAN

Saya…… No Kad Pengenalan. …… beralamat…… ……..dengan ini bersetuju untuk mengambil bahagian secara sukarela dalam penyelidikan yang tersebut di atas *(kajian klinikal/percubaan ubat-ubatan/rakaman video/kumpulan sasaran/temuduga/ soal selidik).

Saya telah diberi penjelasan secara menyeluruh mengenai penyelidikan ini dari segi metodologi, risiko dan komplikasi (seperti tertulis pada Helaian Penerangan Responden). Saya memahami bahawa saya berhak menarik diri dari penyelidikan ini pada bila-bila masa tanpa memberi sebarang alasan.Saya juga memahami bahawa sebarang maklumat yang berkaitan identiti saya akan dirahsiakan.

Saya* berminat / tidak berminat untuk mengetahui keputusan kajian yang melibatkan saya.

I setuju/tidak bersetuju untuk imei/gambar/rakaman video/ rakaman suara digunakan dalam apa jua bentuk penerbitan atau pembentangan. (sekiranya berkaitan).

*potong yang tidak berkenaan

Tandatangan ……..…… Tandatangan ……..…….
(*Responden*) (*Saksi*)

Tarikh :…….. Nama :……..…..

No. K/P: ……..…..

Saya mengesahkan bahawa saya telah menerangkan kepada responden ini sifat dan tujuan penyelidikan yang tersebut di atas.

Tarikh ……..…… Tandatangan ……..…….
(*Penyelidik*)

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APPENDIX E - JKEUPM APPROVAL LETTER

Ref. no: UPM/TNCPI/RMC/JKEUPM/1.4.18.2 (JKEUPM)
Date: 5 April 2021
Dear Prof./Dr./Mr./Ms.,

APPLICATION FOR JKEUPM ETHICAL CLEARANCE: APPROVED

With reference to the above, I am pleased to inform you that your application for ethical clearance for the research project entitled **'Mental Health and Social Media Use among Universiti Putra Malaysia Undergraduate Students'** has been approved.

Please note that the official letter of approval will be issued as soon as possible. However, the ethical clearance is considered effective from the date of this email, and you may now proceed with your research.

Kindly remind the ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Researchers should also complete a Study Final Report upon study completion. The form can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (http://www.tncpi.upm.edu.my/faildokumen).

If you have any enquiries, please contact Ms. Nurulhasanah Ishak (03-97691605) or Ms. Nor Ellia Abd Ajis (03-97691244).

Note: Please use this reference number for any transaction:- **JKEUPM-2021-074**
Thank you.

Yours faithfully,

Prof. Dr. Zamberi Sekawi
Chair
Ethics Committee for Research Involving Human Subjects
Universiti Putra Malaysia

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APPENDIX F - JKEUPM FORM 3.2

JAWATANKUASA ETIKA UNIVERSITI UNTUK PENYELIDIKAN MELIBATKAN MANUSIA (JKEUPM)
UNIVERSITI PUTRA MALAYSIA, 43400 UPM SERDANG, SELANGOR, MALAYSIA

FORM 3.2 STUDY FINAL REPORT
JKEUPM/

1.	**JKEUPM Ref. No.**	JKEUPM-2021-074
2.	**Study Title**	Mental Health and Social Media Use Among Universiti Putra Malaysia Undergraduate Students
3.	**i. Principal investigator** **a. Name** **b. Address** **c. Tel.No** **d. Email** **ii. List of co-investigators**	**i. Principal investigator** Name: Dr Ahmad Zaid Fattah Azman Address: Faculty of Medicine and Health Sciences Universiti Putra Malaysia 43400 UPM Serdang, Selangor Tel No.: +603-89472404 **ii. List of co-investigators** 1. Reenna Raj A/P C Rajaram (200273) 2. Gan Woon Rie (200505) 3. Nurul Iman Sofea Binti Suhaimi (200558)
4.	**Name Of Funding Agency**	-

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5.	**Study Site**	Universiti Putra Malaysia
6.	**Total number of eligible subjects in study site**	15,000
7.	**Recruitment of subjects in study site** **i. Number of participants recruited:** **ii. Number of participants completing trial/ study:** **iii. Proposed in original application:** **iv. Number of withdrawals from trial to date due to:** **a) withdrawal of consent** **b) no response from participants** **c) loss to follow-up** **d) death (not the primary outcome)** **Total study withdrawals:** **v. Number of treatment failures to date (Prior to reaching primary outcome) due to:**	i. 880 ii. 879 iii. 1,210 iv. a) 0; b) 331; c) 0; d) 0 v. Not applicable

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	a) adverse events **b) lack of efficacy** **Total treatment failures:**	
8.	**Duration of study**	6 months
9.	**Protocol Violation or Deviation**	**-**
10.	**Executive summary** ***(Summary of research background, objectives, methodology, findings and conclusion of the research project) - maximum 500 words)*** ***Committee may request additional information if required.**	**Summary of research background:** Mental health problems are highly prevalent among young adults with up to 25% experiencing a mental health problem in a given year. As reported by the World Health Organization (WHO), half of all mental illnesses begin by the age of 13 and three-quarters by mid20s. The volume of social media uses (SMU), encompassing metrics of quantity, have been associated with increased risk for both depression, anxiety and stress among young adults. Many studies have shown that greater daily time spent on social media, increased frequency of Social Media Use (SMU), and multiple platform use were associated with both depression, anxiety and stress. Depression, anxiety and stress in youth may be caused by a lot of factors. Another factor that is poorly researched on could be social media use, which will be the focus of the study. **Objective:** The aim of the study was to determine the association between social media use (SMU) mental health among Universiti Putra Malaysia (UPM) Undergraduate Students.

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		Materials and Method: A cross-sectional study design will be done for this study. Undergraduate students from each faculty will be our sample population for our research. Online questionnaires will be given via respective faculty's Whatsapp group and also passed to the student representative of each faculty. In this study, the data will be analysed with IBM Statistical Package for the Social Science (SPSS) version 26.0. The analysis will be analyzed based on descriptive and analytical analysis. Chi Square test was used to identify factors associated with mental health problems among respondents. Meanwhile Mann-Whitney Test and Spearman Correlation were conducted to identify the social media usage associated with mental health problems among respondents. **Results:** The response rate was 101%. The respondents consist of mostly Malays, female, and second year students of UPM. As for sociodemographic factors, there is an association between gender and faculty of study with mental health problems such as depression, anxiety and stress among undergraduate students of UPM. For social media usage, there was a weak positive relationship between updating Facebook and depression but not statistically significant ($r = 0.046$, $p = 0.207$). There was also a very weak negative relationship between time spent to update on Facebook and stress level and was not statistically significant ($r = -0.019$, $p= 0.599$). Nevertheless, there is a significant association between updating on Instagram and stress level although the correlation is weak and negative ($r = -0.073$, $p = 0.036$). There is also a significant relationship between updating Twitter and stress level and negatively correlated ($r = -0.112$, $p = 0.011$).

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