



Faculty of Medicine and Health Sciences

BACHELOR OF NURSING WITH HONOURS

Year 4, Semester 2, 2024/2025

Course : MDJ 4664 Final Year Project II

Course Coordinator : Miss Feryante Rintika Belansai

**Research title : The Investigation into Obsessive-Compulsive Behaviours
and Mental Health Status Among Undergraduate
UNIMAS Nursing Students**

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Date of submission : 4th July 2025

The Investigation into Obsessive-Compulsive Behaviours and Mental Health
Status Among Undergraduate UNIMAS Nursing Students

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This project is submitted

In partial fulfilment of the requirements for the degree of

Bachelor of Nursing with Honours

Faculty of Medical and Health Sciences
UNIVERSITI MALAYSIA SARAWAK

2025

DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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ACKNOWLEDGEMENT

I would like to take this opportunity to thank those who have contributed directly or indirectly to this research.

First and foremost, all praise and thanks to Allah, the Almighty, for showering me with endless blessings and strength through the completion of my research up until the end. Next, I would like to express my deepest gratitude and appreciation to my supervisor for playing a significant role in my professional development, besides providing guidance and an invaluable contribution since the beginning of this research. Her dedication to striving for the best and inspiring motivation has set a high standard for us all. I would also love to thank my family, especially my parents, for their continuous support and trust in me in completing my research successfully. Their support and prayers sustained me and motivated me this far.

My sincere gratitude to the Centre for Graduate Studies for the advice and support given during my period of study at Universiti Malaysia Sarawak.

Finally, I would like to thank the management of Universiti Malaysia Sarawak for making it possible for me to complete my studies here in Sarawak. Thank you all.

ABSTRACT

Obsessive-compulsive behaviours (OCBs) are characterized by intrusive thoughts and repetitive actions that can significantly impact mental health and daily functioning. Nursing students, due to the high demands of their academic and clinical training, are particularly vulnerable to these behaviours and associated psychological problems. This study investigates the relationship between obsessive-compulsive behaviours and mental health status among undergraduate nursing students at Universiti Malaysia Sarawak (UNIMAS). Using a cross-sectional design, data were collected via validated instruments, which are the Obsessive-Compulsive Inventory – Revised (OCI-R) and the Depression Anxiety Stress Scales (DASS-21). The sample consisted of nursing students across 4 years of study ($n = 162$). Descriptive and statistical analyses examined the prevalence of OCBs and mental health symptoms (depression, anxiety, and stress) and their correlations using total scores of both scales. Results indicated a notable prevalence of obsessive-compulsive behaviours (67.9%), which were significantly associated with poorer mental health status ($r(162)$, $p < .001$). The findings underscore the importance of early detection and tailored mental health interventions within nursing education to mitigate the negative impact of OCBs. This study contributes to the understanding of psychological challenges in nursing students and highlights the need for supportive strategies to enhance their mental well-being and academic success.

Keywords: obsessive-compulsive behaviours, mental health, nursing students, anxiety, depression, stress

***Kajian Mengenai Tingkah Laku Obsesif-Kompulsif dan Status Kesehatan Mental dalam
Kalangan Pelajar Sarjana Muda Kejururawatan UNIMAS***

ABSTRAK

Tingkah laku obsesif-kompulsif (OBK) dicirikan oleh pemikiran yang mengganggu dan tindakan berulang yang boleh memberi kesan ketara terhadap kesihatan mental dan fungsi harian individu. Pelajar kejururawatan, disebabkan oleh tuntutan akademik dan latihan klinikal yang tinggi, adalah sangat terdedah kepada tingkah laku ini serta masalah psikologi yang berkaitan. Kajian ini menyiasat hubungan antara tingkah laku obsesif-kompulsif dan status kesihatan mental dalam kalangan pelajar sarjana muda kejururawatan di Universiti Malaysia Sarawak (UNIMAS). Menggunakan reka bentuk kajian keratan rentas, data telah dikumpul melalui instrumen yang telah disahkan, iaitu Obsessive-Compulsive Inventory – Revised (OCI-R) dan Depression Anxiety Stress Scales (DASS-21). Sampel terdiri daripada pelajar kejururawatan merangkumi 4 tahun pengajian ($n = 162$). Analisis deskriptif dan statistik dijalankan untuk menilai prevalens OBK dan simptom kesihatan mental (kemurungan, kebimbangan, dan tekanan) serta hubungannya menggunakan skor keseluruhan kedua-dua skala. Keputusan menunjukkan prevalens tingkah laku obsesif-kompulsif yang ketara (67.9%), yang didapati berkait rapat dengan status kesihatan mental yang lebih rendah ($r(162), p = <.001$). Penemuan ini menekankan kepentingan pengesanan awal dan intervensi kesihatan mental yang bersesuaian dalam pendidikan kejururawatan bagi mengurangkan kesan negatif OBK. Kajian ini menyumbang kepada pemahaman tentang cabaran psikologi dalam kalangan pelajar kejururawatan dan menyoroti keperluan strategi sokongan untuk meningkatkan kesejahteraan mental dan kejayaan akademik mereka.

Kata kunci: *tingkah laku obsesif-kompulsif, kesihatan mental, pelajar kejururawatan, kebimbangan, kemurungan, tekanan*

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LIST OF ABBREVIATION

OCB	Obsessive-Compulsive Behaviour
OCD	Obsessive-Compulsive Disorder
OCS	Obsessive-Compulsive Symptom
UNIMAS	Universiti Malaysia Sarawak
OC	Obsessive Compulsive
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders fifth edition
DSM-5 TR	Diagnostic and Statistical Manual of Mental Disorders fifth edition Text Revision
APA	American Psychiatric Association
Y-BOCS	Yale-Brown Obsessive–Compulsive Scale
GOCS	Global Obsessive–Compulsive Scale
MOCI	Maudsley Obsessional-Compulsive Inventory
OCI-R	Obsessive-Compulsive Inventory – Revised
DASS-21	Depressive Anxiety Stress Scales - 21
BDI-II	Beck Depression Inventory-II
BAI	Beck Anxiety Inventory
FMHS	Faculty of Medicine and Health Sciences
PIS	Participant Information Sheet
SPSS	Statistical Package for Social Sciences
COVID-19	Coronavirus Disease 2019
ASOC	Arabic Scale of Obsession-Compulsion
GHQ-28	General Health Questionnaire-28
SI	Suicidal Ideation

CHAPTER 1

Introduction

1.0 Introduction

This chapter describes the study background, problem statement, research questions, and objectives, the significance of the study, following the operational definitions of the terms, and a summary of the chapter.

1.1 Background of the study

The study of investigation into obsessive-compulsive behaviours and mental health status among nursing students is grounded in a comprehensive understanding of obsessive-compulsive disorder (OCD), a long-lasting psychiatric condition that makes people think about unwanted ideas (obsessions) and then do repeated acts (compulsions) that affect their life quality (Piasek et al., 2023; Başhan, 2022). Obsessive-compulsive behaviours are made up of mental intrusions and self-repeating actions that people do to escape distress from their obsessive thoughts (Kerns et al., 2024; Sloan, 2022). These actions represent the main features of obsessive-compulsive disorder (OCD), which affects about 1 or 2 percent of people during their lifetime, according to Sloan (2022).

Furthermore, these behaviours can significantly affect individuals' mental health and daily functioning (Kerns et al., 2024). Based on Marincowitz et al. (2022), these behaviours are frequently characterized by a persistent urge to perform certain actions or rituals in response to unwanted thoughts or fears. While they can be experienced by anyone at some point, when these behaviours become excessive and interfere with daily life, they can lead to significant distress and impairment (Wagstaff, 2024). Moreover, individuals engage in obsessive-compulsive behaviours as a means of managing anxiety or distress and preventing

a feared event caused by intrusive thoughts, but they typically provide only temporary relief (Marincowitz et al., 2022). Besides, these behaviours can consume considerable time, limiting the individual's capacity to function regularly (Sloan, 2022).

Research by Abramowitz (2023) shows that obsessions usually deal with contamination concerns, self-harm and violence, errors, sexual matters, ethical issues, inappropriate language, and a compulsive need for order and structure. The need for compulsive behaviour involves constant, extreme washing and cleaning as well as checking routines alongside self-assurance measures to suppress obsessions. People with obsessive-compulsive behaviours repeat physical actions like washing hands extensively and checking locks multiple times, or mental actions like counting and organizing objects.

The compulsions are typically driven by discomfort or fear rather than enjoyment, performed in a specific order to neutralize the associated obsessions and provide only short-term relief, distinguishing them from other repetitive behaviours that may be soothing (Kerns et al., 2024). While normal people have these routines sometimes, they do not equal having "true OCD." Clinicians must assess OCD by viewing its symptoms against DSM-IV standards and Y-BOCS scoring methods (Sultan et al., 2020). To meet OCD criteria, the obsessive and compulsive cycle must be so severe that it consumes more than an hour daily and disrupts meaningful tasks (APA, 2013). Therefore, people may exhibit obsessive-compulsive behaviours without having the disorder, especially in response to stress or anxiety.

Even though most find these behaviours distressing, obsessive-compulsive behaviours may not cause distress and can occur in various contexts without leading to significant impairment in some people, unlike OCD, which involves distressing obsessions

and compulsions that the individual recognizes as excessive or irrational. However, Sloan (2022) stated that these behaviours are often distressing and can significantly impair daily functioning. In the context of the disorder, which is OCD, Din et al. (2019) and Sarnin et al. (2022) suggest that approximately 1% to 2% of the Malaysian population is affected by this disorder across various ethnic groups and genders, significantly impacting individuals' quality of life and functioning. Meanwhile, a study done by El-Sayed et al. (2024) stated that OCD ranks as the fourth main mental health problem worldwide. Research indicates that OCD affects 2.3% of people at any point during their lives, with a range between 1.1% to 3.3%. These symptoms and behaviours may be unpredictable, shifting over time or altering their expressions over time (El-Sayed et al., 2024).

Early detection of obsessive-compulsive behaviours is crucial to provide first-line treatment before it becomes a disorder (OCD). Hence, this study hopes to identify obsessive-compulsive behaviours early to help prevent them from harming nursing students' mental health. Consequently, helping undergraduate nursing students achieve better mental health results. Moreover, this study helps to determine whether obsessive-compulsive behaviours significantly impact nursing students' mental well-being or not, and whether these behaviours cause distress or not. Given this backdrop, the present study aims to investigate the relationship between obsessive-compulsive behaviours and mental health status among undergraduate nursing students at Universiti Malaysia Sarawak (UNIMAS). By exploring these relationships, this research seeks to provide insights that can inform educational strategies and support systems designed to enhance the mental well-being of nursing students.

1.2 Problem Statement

Nursing students are a population at risk for various mental health issues, including obsessive-compulsive behaviours, which are often linked to other mental health disorders due to their high-stress environment, where students face rigorous academic demands, clinical responsibilities, and emotional challenges associated with patient care. This situation can exacerbate feelings of anxiety and lead to the development or intensification of obsessive-compulsive behaviours. Alblowy (2022) stated that nursing students demonstrate more anxiety and mental health problems compared to their peers in other disciplines. Besides, this study also demonstrates high rates of obsessive-compulsive symptoms among nursing students, which calls for specific treatment programs designed for these students.

Furthermore, Sawadogo et al. (2019) stated that nursing students may experience pressures such as the fear of making mistakes in clinical settings, the need for perfectionism, and the emotional toll of patient care that can exacerbate obsessive-compulsive behaviours. Nursing students experience a decline in mental health, with increased psychological distress throughout their education, which could aggravate obsessive-compulsive tendencies (Evans et al., 2021). Moreover, nursing students with undergraduate degrees demonstrate equivalent, if not greater, levels of poor mental health and substance use than the general population; nonetheless, this subject remains under-researched (Solomon et al., 2024).

The high rate of obsessive-compulsive behaviours found among nursing students is concerning. Nursing students exhibit significantly higher levels of obsessive-compulsive behaviours compared to national norms (Li et al., 2020). 38.5% of 270 college undergraduate students, including nursing students, show a significant prevalence of obsessive-compulsive behaviours (Costa & Hardan-Khalil, 2018). Despite its prevalence, there are very few studies

conducted on investigating these behaviours, specifically among undergraduate nursing students. These deficiencies not only affect the quality of care provided to individuals suffering from this condition but also add to stigma towards mental health conditions, as healthcare providers may not fully understand the complexities of this condition (Tan et al., 2020; Saad et al., 2022).

Obsessive-compulsive behaviours can lead to OCD. Individuals who exhibit severe obsessive-compulsive symptoms are thought to be more likely to acquire clinical OCD. This suggests that not all individuals with obsessive-compulsive behaviours will develop OCD, but there is a significant correlation between the two (Basel et al., 2023). Many people with OCD in Malaysia are undiagnosed or untreated due to reasons like stigma, restricted access to mental health care, and a shortage of experts skilled in OCD therapy (Lee et al., 2020). Similarly, Sarnin et al. (2022) indicate that in Malaysia, mental health disorders, including OCD, are often misdiagnosed or inadequately addressed due to insufficient knowledge and stigma surrounding these conditions. Furthermore, the lifetime incidence of OCD is 2.3%, however, this statistic may be underestimated since individuals with moderate to severe symptoms frequently do not seek treatment (Shoqeirat, 2021). According to Siev et al. (2019), OCD, including its behaviours, is still overlooked globally, although it is the most common mental condition. This study also indicates that the ego-personality of this condition may cause individuals to hide their symptoms and suppress obsessive thoughts and compulsive behaviours.

Following Taher et al. (2021), students at universities, particularly those studying the medical area, possess a key age for the onset of obsessive-compulsive behaviours, making them a priority group for early intervention and education. Moreover, experiential

avoidance, a common behaviour of OCD, can exacerbate obsessive-compulsive behaviours and is prevalent among university students (Silva et al., 2023). This suggests that early detection of the behaviours associated with OCD is crucial to develop targeted interventions and support systems within academic settings. Furthermore, Hasan (2020) indicates that there is a notable presence of stigma and poor attitudes towards mental illnesses, including OCD, among nursing students. Most young individuals experiencing this condition may be unaware of their symptoms or consider them embarrassing, leading them to hide them unless questioned (Nazeer et al., 2020).

Individuals often refuse to talk about the problems these behaviours cause in their lives, or do not realize they have these obsessive-compulsive behaviours, considering them just bad habits without realizing their impacts on their mental health status, because of the stigmatization this condition holds. In addition, the past COVID-19 pandemic has intensified mental health challenges among nursing students globally, with studies indicating an increase in obsessive-compulsive behaviours linked to heightened anxiety about health and safety (El-Sayed et al., 2024).

The impact of obsessive-compulsive behaviours on mental health is profound. Health professionals, including nursing students, may experience heightened levels of stress, depression, and overall dissatisfaction with their academic experience due to the time-consuming nature of these behaviours (Sawadogo et al., 2019). According to Alblowy (2022), these behaviours can interfere with nursing students' academic performance and daily functioning.

1.3 Research questions

The research question is outlined below:

1. What is the prevalence of obsessive-compulsive behaviours among undergraduate UNIMAS nursing students?
2. What is the mental health status of undergraduate UNIMAS nursing students?
3. Is there any relationship between obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students?

1.4 General research objective

The research aim is to investigate the relationship between obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students.

1.5 Specific research objectives

The specific research objectives are:

1. To assess the prevalence of obsessive-compulsive behaviours among undergraduate UNIMAS nursing students.
2. To identify the mental health status of undergraduate UNIMAS nursing students.
3. To investigate the relationship between obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students.

1.6 Hypotheses

Alternative hypotheses: There is a significant correlation between obsessive-compulsive behaviors and the mental health status of undergraduate UNIMAS nursing students.

Null hypotheses: There is no significant correlation between obsessive-compulsive behaviors and the mental health status of undergraduate UNIMAS nursing students.

1.7 Significance of the study

Investigating into obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students reveals significant insights into the mental health challenges faced by nursing students, ultimately guiding educational strategies and support systems that foster resilience and effective coping mechanisms. This study was conducted as it could potentially create awareness of obsessive-compulsive behaviours and their potential impacts on mental health status among undergraduate UNIMAS nursing students, since there are no studies have been found to investigate obsessive-compulsive behaviours and their relationship with mental health status among UNIMAS nursing students.

Shoqeirat (2021) mentioned that there is a need to raise awareness about how these symptoms emerge in university students since they may give rise to a range of psychological issues that include depression, anxiety, suicide, and drug abuse. There are also very minimal research studies on investigating obsessive-compulsive behaviours and examining their relationship to mental health status among nursing students rather than other population groups found when doing this research. This demonstrates that, despite their prevalence, many nursing students are unaware of obsessive-compulsive behaviours and their impact to mental health status.

The study's focus on nursing students is particularly relevant as they are future frontline healthcare providers who will encounter individuals with obsessive-compulsive behaviours in clinical settings. In this research context, investigating obsessive-compulsive behaviours and exploring their relationship with overall mental health status among

undergraduate nursing students at Universiti Malaysia Sarawak (UNIMAS), the study can identify gaps in education and training, ultimately leading to improved management or care for individuals with this problem.

Investigating the obsessive-compulsive behaviours by using the OCI-R instrument enables students to score their symptoms to determine if they are likely to have OCD, allowing them to be identified as soon as possible and receive medical supervision and therapy (Taher et al., 2021). The research aimed to give insights into the links between obsessive-compulsive behaviours and mental health status, as well as to enrich educational techniques along with assistance systems meant to improve nursing students' mental health. Therefore, this research is timely and necessary, given the increasing recognition of the impact of obsessive-compulsive behaviours on university students' mental health and the need for targeted educational interventions. Overall, the study's findings will highlight the necessity of targeted mental health support and educational initiatives for nursing students to reduce the effects of obsessive-compulsive behaviours on mental health outcomes.

1.8 Definition of Terms

1.8.1 Obsessive-Compulsive Behaviours

Obsessive-compulsive behaviours are distinguished by a pattern of unwanted thoughts and repetitive acts that severely disrupt a person's everyday life. These behaviours are most connected with obsessive-compulsive disorder (OCD), a mental health illness characterized by two major components: obsessions and compulsions. Obsessions and compulsions are defined according to the Diagnostic and Statistical Manual of Mental Disorders fifth edition Text Revision (DSM-5 TR), which was released by the American Psychiatric Association (APA) in 2022. The definitions for obsession and compulsion are:

1.8.1.1 Obsessions

Recurring and continuous thoughts, urges, or images that appear at some time throughout the disruption are intrusive and unwanted, and in most individuals, they cause substantial worry or discomfort. The person tries to replace such ideas, urges, or images with another perception or behaviour (a compulsion).

1.8.1.2 Compulsions

Repeated behaviours or mental actions that the individual feels obliged to engage in response to an obsession or to obey regulations must be strictly enforced. These actions or mental acts are intended to prevent or reduce worry or discomfort, but they are frequently unrealistic to the occurrences they are intended to avoid, or they are excessive.

In this study, the obsessive-compulsive behaviours of undergraduate UNIMAS nursing students are evaluated using the measurement tool developed by Foa et al. (2002), the Obsessive-Compulsive Inventory-Revised (OCI-R).

1.8.2 Mental Health Status

The World Health Organisation defines mental health status as a level of psychological well-being that comprises subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational reliance, and the realization of one's intellectual and emotional potential. Franjić (2022) defines mental health status as an individual's psychological well-being, encompassing their ability to reach their full potential, manage stress effectively, work productively, and contribute to their community.

In this study, mental health status refers to changes in the mental health status of UNIMAS undergraduate nursing students as a result of obsessive-compulsive behaviours on mental health. The psychological state of UNIMAS undergraduate nursing students is evaluated using the Lovibond & Lovibond (1995) Depression, Anxiety, and Stress Scale-21 (DASS-21) scale.

1.8.3 Nursing students

Nursing students are those enrolled in a nursing program who engage in clinical practice to develop professional attitudes, behaviours, and skills necessary for nursing services (Marlina, 2017). They are typically involved in a rigorous curriculum that emphasises both theoretical knowledge and practical skills necessary for effective nursing practice (Saeedi et al., 2019; Neumbe et al., 2022).

Nursing students in this study refer to undergraduate nursing students taking a bachelor's degree in nursing program at UNIMAS.

1.9 Summary

This chapter highlights the definition of obsessive-compulsive behaviours and mental health status, besides demonstrating the problems and significance of this study to nursing students, which will be further discussed in this study. The research questions, aim, and objectives were described. The operational terms used throughout the study, such as obsessive-compulsive behaviours, mental health status, and nursing students, were defined and further construed through the literature review in the next chapter.

CHAPTER 2

Literature review

2.0 Introduction

This chapter summarizes the literature review, which involves multiple research papers on similar topics, variables, and samples. Several online databases have been used, including ResearchGate, Google Scholar, PubMed, and other sources using keywords such as obsessive-compulsive behaviours or obsessive-compulsive symptoms, obsessive-compulsive disorder (OCD), mental health status, and the relationship between obsessive-compulsive behaviour and mental health status. It creates an overview of the prevalence of obsessive-compulsive behaviours and mental health status, and an understanding of the relationship between these two.

The search results were sorted by date to give the latest paper published not later than 10 years and the selected papers were written in English. The prevalence of obsessive-compulsive behaviours and mental health status has been well-researched in cross-sectional studies of different countries and time frames. Even though some studies were focused on the prevalence of obsessive-compulsive disorder (OCD), there is a relation between obsessive-compulsive behaviours and OCD since OCD includes the characteristics of obsessive-compulsive behaviours. Several findings also highlighted the association between obsessive-compulsive behaviours and mental health status.

2.1 Literature Review

2.1.1 Prevalence of Obsessive-Compulsive Behaviours

Alblowy (2022) assessed OCD symptoms among 279 nursing students in Alriyada College, Jeddah, using the “Arabic Scale of Obsession-Compulsion” (ASOC). The study showed a low prevalence of OCD symptoms. According to the findings, the weighted average for all aspects of obsessive-compulsive disorder was $1.5458 \pm .36035$. The "orderliness and discipline" component had the highest mean score of OCD symptoms with a mean score of $1.9023 \pm .48364$, while the "obsessive thoughts" dimension ($1.7513 \pm .53314$) was the second highest. The results also show second-year nursing students have the highest mean score for OCD symptoms ($\pm .408301.6284$). Similarly, a cross-sectional Brazilian study by Torres et al. (2015) showed only 3.8% (18) of 471 students presented with probable OCD as indicated by the OCI-R scores. However, this prevalence was higher than the general population's prevalence of 1%. In contrary, the prevalence was higher in the overall university students' sample in a study by Sultan et al. (2020), in which 20% of 404 university students exhibited obsessive-compulsive symptoms based on the scores collected through the OCI-R instrument to screen for obsessive-compulsive behaviours.

Taher et al. (2021) discovered a substantial rise in the incidence of obsessive-compulsive behaviours during the COVID-19 pandemic, with 43% (707) among 1644 Iraqi medical students showing likely OCD symptoms as measured by the OCI-R scale. The study also indicated that unpleasant thoughts were the most common symptom (51.8%), whereas cleaning and contamination scales were low (14% and 19.4%, respectively). This study was supported by a cross-sectional study done by Sarhan and Saleh (2022) that shows the prevalence of obsessive-compulsive behaviours measured using the Y-BOCS scale significantly increased during the COVID-19 pandemic with 47% of a study's participants

exhibiting symptoms as those who contracted COVID-19 were twice as likely to experience OCD symptoms, likely due to heightened anxiety and adherence to preventive measures.

Consistently, a descriptive correlational study by Elsayed and Ghazi (2021) among 275 first-year undergraduate nursing students at Alexandria University of Egypt found that 60.0% had mild OC traits, 35.3% had moderate OC traits, and 4.7% had severe OC traits, with a total mean score of 25.81 ± 10.073 as a result from the fear level of COVID-19 pandemic. The OC features were assessed using the shortened version of the Arabic Obsessive-Compulsive Scale (AOCS). This study concluded that early diagnosis and treatment of students with significant anxiety about COVID-19 is crucial in preventing complicated and long-term obsessive-compulsive symptoms.

Furthermore, Shoqeirat (2021) examined obsessive-compulsive symptoms using the Y-BOCS scale among 584 university students and stated that obsessive-compulsive symptoms were common among this population group (58.53%), with women showing a greater frequency. According to this study, only 1.7% of the students show subclinical OCD symptoms or can be considered to have no OCD symptoms. Meanwhile, roughly 98.3% of students experience OCD symptoms (varying from mild to extreme), with 39.8% scoring below the mild threshold, 22.9% showing moderate symptoms, and 37.5% reporting severe to extreme OCD symptoms. In opposite, Al-Awad et al. (2024) found a slightly lower prevalence in Saudi Arabia, with 411 (46.4%) of 866 undergraduate medical students exhibiting obsessive-compulsive symptoms based on OCI-R scores of 21 or more (indicating probable OCD). However, the sample was bigger in this study compared to Shoqeirat (2021). Nevertheless, this study supported Shoqeirat (2021) by showing that obsessive-compulsive symptoms are more prevalent in females than in males.

The findings from Shoqeirat (2021) and Al-Awad et al. (2024) align with results from the Coban et al. (2024), which examined obsessive-compulsive characteristics in two sexes using the Y-BOCS scale at Üsküdar University's Medical Faculty, showing that females scored higher on the Y-BOCS scale, including the compulsion subscale ($p < 0.001$). However, the scores for the obsession's subscale were similar between the two sexes. Besides that, washing was the primary symptom for females, with 55.43% and only 27.46% of males ($p < 0.001$). Meanwhile, taboo thoughts were the primary symptom for 64.75% of males, with only 37.32% of females ($p < 0.001$), in which religious ($p < 0.001$) and sexual ($p < 0.05$) obsessions or compulsions are the primary symptoms of taboo thoughts. Also, males were more likely to report checking compulsions as their primary symptom ($p < 0.05$). The proportions of aggressive obsessions or compulsions were equivalent between the sexes.

Another cross-sectional study by Alsaweer et al. (2024) estimated the incidence of obsessive-compulsive symptoms among adult participants in Bahrain as 15%, with 85% of those affected experiencing such mild manifestations. They also indicate that obsession and compulsion symptoms were significantly higher among student participants compared to their counterparts, indicating potential risk factors for developing obsessive-compulsive symptoms in this population.

2.1.2 Mental Health Status

A study done by Hussein and Mushaluk (2023) during the COVID-19 outbreak showed many people suffering mental health effects, with rates exceeding 50%, primarily affecting young female nursing students due to factors such as academic uncertainty, social isolation, and work overload. This study confirms previous research by Morton (2022) that showed 63% of university nursing students deteriorated their mental well-being since the fall of 2020. Subsequently, a recent study by Badillo-Sánchez et al. (2025) found increased levels of stress, anxiety, and depression among nursing students, with prevalence rates of stress being the most prominent at 52.46%, anxiety at 33.6% and depression at 37.92% during the COVID-19 pandemic.

Besides the high prevalence during COVID-19, Uddin and Fariha (2024), who examined anxiety and depression levels among 120 undergraduate nursing students in Bangladesh, also found a significant prevalence of anxiety (66.0%), with 38.0% reporting abnormal levels. Depression levels were lower, with 18.4% scoring in the abnormal range. This study is consistent with Chapagain et al. (2023), who also revealed a high prevalence of anxiety, with 37% of 104 nursing students experiencing severe anxiety, and lower for severe depression and stress, which is 17%. This indicates a concerning level of psychological distress among the nursing students.

Similarly, a cross-sectional study conducted at Udayana University among 36 undergraduate nursing students found that those undergoing clinical training frequently faced stressors, leading to fatigue, anxiety, and difficulties in role performance, with challenges in thinking being most commonly reported due to stress (Mahaswari et al., 2023). Additionally, in a study in Cyprus among 90 postgraduate nursing students reported that 33

(36.7%) have clinically significant mental distress, with factors such as parental divorce and dissatisfaction with the education system exacerbating their mental health difficulties as indicated by a greater score on the General Health Questionnaire-28 (GHQ-28) among those having these factors (Sokratous et al., 2023).

In the Malaysian context, 31.6% of 174 undergraduate nursing students at the International Islamic University Malaysia demonstrated psychological distress according to the 12-item General Health Questionnaire results, with major sources of stressors including fear of failing, examination pressures, and academic overload (Radeef et al., 2019). Despite its high prevalence, less than 1% of institutional support services were utilized, with 75% of 172 undergraduate nursing students in New Zealand experiencing emotional distress and anxiety being the most prevalent issue at 78.5% (Solomon et al., 2024). These findings indicate a significant mental health challenge among nursing students that could impact their academic performance and overall well-being, highlighting the urgent need for institutional reforms to enhance access to personalized mental health support and integrate mental health training into the nursing curriculum.

Abdelmonaem et al. (2024) found that self-stigma significantly impacts nursing students' willingness to seek psychological help. The study revealed that while many students held positive attitudes toward seeking help, financial barriers and self-stigma were prevalent issues preventing them from accessing necessary mental health services. Therefore, Morton (2022) has emphasized the importance of addressing stigma and enhancing mental health literacy among nursing students to encourage help-seeking behaviours.

Lack of knowledge regarding mental health will also reduce help-seeking behaviours among those experiencing mental illness. Hence, it further increases mental health issues within this population. While most nursing students held positive attitudes toward patients with mental illness (53.1% of 177), significant gaps in knowledge about mental health remained, particularly concerning misconceptions (Al-Maqbali et al., 2023). Similarly, a study conducted in Burkina Faso by Sawadogo et al. (2019) found that nursing students had lower mental health issues knowledge scores (36%) than their medical counterparts. This lack of knowledge can lead to negative attitudes and stigmatization, as students who are less informed are more likely to harbour prejudices against individuals with mental health disorders (Poreddi et al., 2014).

2.1.3 Relationship between Obsessive-Compulsive Behaviours and Mental Health Status

A cross-sectional study by Shafaghi et al. (2024) among 58 OCD patients and 38 healthy controls (n=96) identified OCD patients (who have obsessive-compulsive behaviours) exhibited greater depression scores measuring 20.50 compared to 2.16 for controls ($P < 0.001$) and anxiety levels averaging 17.8 compared to 4.29 points in controls ($P < 0.001$). This study aligns with the descriptive and cross-sectional findings by Das and Malakar (2024), who discovered that psychiatric comorbidities occur at high rates in OCD patients through examining 100 participants. They noted major depressive disorder (63%) and mixed anxiety and depressive disorder (22%) appeared most often, with panic disorder found in 7% of patients, suggesting a significant prevalence of mental comorbidities among people with OCD and a strong link between obsessive-compulsive behaviours and psychiatric issues related to mental health status.

Furthermore, Taher et al. (2021) found that obsessive-compulsive symptoms accompanying mental health problems affect 70.1% (1153) of 1644 Iraqi medical students. Worry and stress emerged as top issues, with 674 (25.9%) and 617 students (23.7%) experiencing these problems, respectively. Depression was lower at 465 (17.9%). This is consistent with Brazilian research by Torres et al. (2015) that found a lower incidence of depression for those experiencing OCD symptoms, which is 3.8% (18) of 471 among medical students. Regardless of the prevalence of mental comorbidities among people with obsessive-compulsive behaviours or OCD symptoms, there is a relationship between these two, as revealed by a cross-sectional study by El-Sayed et al. (2024), who found a link between high levels of anxiety and the incidence of obsessive-compulsive symptoms among 375 nursing students. In addition to that, Aamir (2024) also found a statistically significant relationship between those who screened positive for OCD and depression ($P < 0.001$, odds ratio 3.393).

Concurrently, Rowe et al. (2021) who investigate the association between obsessive-compulsive disorder (OCD) and psychiatric comorbidities, specifically depression, bipolar disorder, substance abuse disorder, and psychosis discovered strong associations among all examined comorbidities, with particularly strong links identified for depression, indicating a significant relationship between obsessive-compulsive behaviours and overall mental health status. Besides that, Benster et al. (2022) highlighted that individuals with obsessive-compulsive disorder (OCD) are more likely to have suicidal ideation (SI) than the general population.

Moreover, Mil et al. (2024) discovered that out of 15412 people suffering from schizophrenia, schizoaffective disorder, or bipolar disorder, 2358 (15.3%) had OCS but no OCD, and 2586 (16.8%) had OCD. This study is consistent with Giasuddin and Hossain (2020), who stated that obsessive-compulsive behaviours are closely linked to mental health status, often co-occurring with anxiety and depression. They also mentioned that the symptoms of OCD, such as obsessions and compulsions, can significantly interfere with normal functioning and relationships, leading to increased anxiety and depressive symptoms, and a substantial proportion of OCD patients also experience major depression and anxiety at clinical levels, highlighting the complex interplay between OCD and overall mental health.

2.2 Conceptual framework

A conceptual framework illustrates the relationships between key variables in this study, grounded in theory or prior research based on the literature reviews. Figure 2.1 shows the relationship between obsessive-compulsive behaviours and mental health status that will be examined through the correlation of both total scores for OCI-R and DASS-21. In this framework, the independent variable is obsessive-compulsive behaviours measured using the OCI-R, whereas mental health status measured using DASS-21 is the dependent variable. Furthermore, this conceptual framework supports the study's alternative hypothesis, which is that there is a significant relationship between obsessive-compulsive behaviours and the mental health condition of undergraduate UNIMAS nursing students. The sub-hypothesis can be stated as greater degrees of obsessive-compulsive behaviour are correlated with increased depression, anxiety, or stress. Hence, this demonstrates that obsessive-compulsive behaviours might have an influence on UNIMAS undergraduate nursing students' mental health in terms of depression, anxiety, and stress. Therefore, the purpose of this study is to

investigate the influence or link between obsessive-compulsive behaviours and the mental health of undergraduate UNIMAS nursing students.

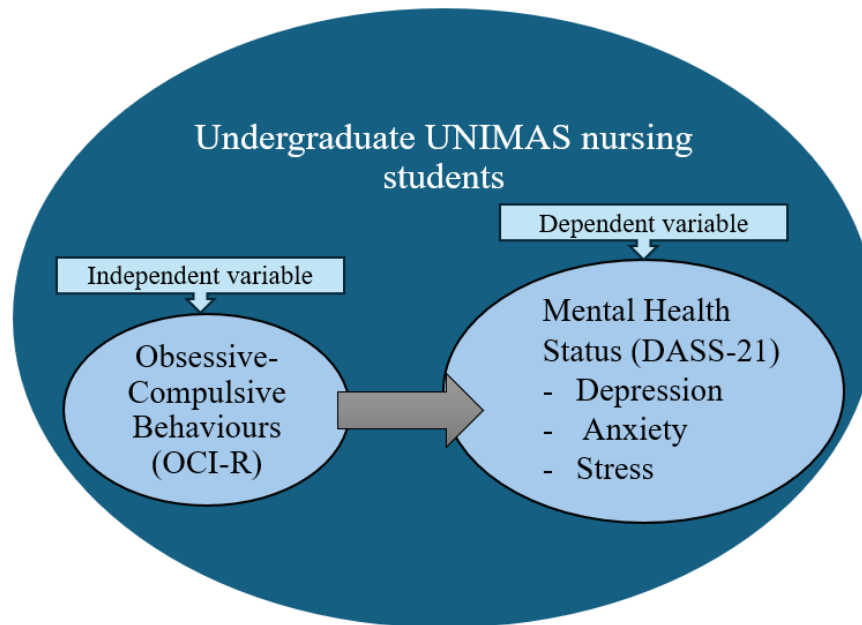


Figure 2.1: Conceptual framework model

2.3 Summary

This chapter concluded by comparing similar studies and their outcomes using the same keywords in the research. Some of the findings are varied due to many factors such as different locations, backgrounds, beliefs, and populations. The conceptual framework supports the alternative hypothesis of this study, in which there is a significant correlation between obsessive-compulsive behaviours and mental health status in terms of depression, anxiety and stress.

CHAPTER 3

Methodology

3.0 Introduction

This chapter highlights the research methods in detail. The selected methods and tests were utilized to achieve the research objectives from the data collection process up to the data analysis, and further to the discussion section of the outcomes.

3.1 Research Setting

This study was conducted at the Universiti Malaysia Sarawak (UNIMAS), Faculty of Medicine and Health Sciences, which is located on Jalan Datuk Mohammad Musa in Kota Samarahan, Sarawak. This study exclusively included undergraduate nursing students from UNIMAS' Faculty of Medicine and Health Sciences.

3.2 Research Design

The chosen research study design is a cross-sectional descriptive study using a quantitative technique. This research design captures data at a single point in time to describe characteristics or phenomena within a specific population. This sort of study is very effective for determining the prevalence of specific characteristics, habits, or attitudes without changing any variables. This study design can also be conducted fast, and efficiently while using minimum cost in collecting the data. Besides, the subjects were chosen since the inclusion and exclusion criteria for the study were met. A quantitative approach is chosen as it involves numbers and needs proper graphs to present the prevalence of obsessive-compulsive behaviours and mental health status that are gathered from the conduction of the questionnaires.

3.3 Inclusion and Exclusion Criteria

3.3.1 Inclusion Criteria

This study's inclusion criteria are undergraduate nursing students in their first through fourth years, as well as those who are willing to participate. Nursing students from year 1 until year 4 were selected because all individuals can experience obsessive-compulsive behaviours and changes in mental health status despite their age groups, genders, or backgrounds. Undergraduate nursing students from UNIMAS were selected to participate as the study aims to study this specific population group.

3.3.2 Exclusion Criteria

This study's exclusion criteria are those who have participated in the pilot study and students from other programs.

3.4 Population

This study involved all undergraduate Bachelor of Nursing with honours students from the first to the fourth year who were randomly selected. The faculty consists of 237 undergraduate nursing students of various backgrounds.

3.5 Sampling

3.5.1 Sampling Method

The sampling technique is a manner of selecting a selected portion of the target population for a study. This study used a simple random sampling method to select participants of choice as a small group representing a population to be involved in the study. This sampling method was categorized under probability sampling. It was conducted by arranging the names of the nursing students in alphabetical order within the respective

cohort. Then, Microsoft Excel was used to select random numbers representing the names of the students who were selected to participate. The steps involved in Microsoft Excel to randomize numbers are pressing the "Enter" key after typing the formula = RAND() in the cell where the researcher wishes to generate the random number. The first 164 numbers listed are chosen to be involved in the study. Thus, every participant who met the inclusion criteria has an equal probability of being chosen for the study. The sample number will reflect the entire population. Hence, no further classification is required, and the outcomes were highly randomized.

3.5.2 Sample Size

The sample size for this investigation was estimated using Yamane (1973) formula with a 95% confidence level. The original formula introduced by Taro Yamane in his book "Statistics: An Introductory Analysis" in 1967 established the initial method for calculating the sample size required for the given population size and desired level of precision. In 1973, Yamane provided further clarification and examples of the application of his formula, emphasizing its practical use in various research contexts. While the core formula remained unchanged, the focus shifted towards a better understanding of how to apply it effectively in real-world scenarios. The refined approach included more detailed guidance on selecting an appropriate margin of error and understanding how it impacts sample size calculations.

$$n = \frac{N}{1 + Ne^2}$$

Figure 3.1: Taro Yamane 1973 formula

Where:

n = sample size

N = population size

e = margin of error or precision error (0.05)

The sample size calculation was the following:

$$n = \frac{N}{1 + N(e)^2} = \frac{237}{1 + 237(0.05)^2} = 149 \quad \text{Equation 3.1}$$

Based on this formula, the estimated sample size for this study is (n=149). For the participants' compensation that the researcher cannot approach or contact, most researchers commonly add 10% to the sample size called, attrition rate. The attrition rate is added considering a possible drop-out rate of 10% of non-complete responses, those who refuse to consent to the study, withdraw from the study, and those who are not willing to participate. Therefore, 10% of the calculated population size (attrition rate) was included as below:

$$\text{Final sample size} = n + (n \times 10\%) \quad \text{Equation 3.2}$$

$$= 149 + (149 \times 10\%) \quad \text{Equation 3.3}$$

$$= 149 + 14.9 \quad \text{Equation 3.4}$$

$$= 163.9 \sim 164 \quad \text{Equation 3.5}$$

Therefore, a total sample size of 164 participants is needed to achieve the aim and objectives of this study.

3.6 Study Instrument

Data from the participants is collected by using an online survey questionnaire. All of the questions are in the English language. There are three sections (Sections A, B, and C) included in the online survey questionnaire (refer to Appendix C). Section A collects participants' sociodemographic data, which includes age, gender, religion, race, year of study, and GPA average. This section required the participants to either fill in the blanks or choose multiple-choice answers that were given. Section B consisted of 18 items from the Obsessive-Compulsive Inventory-Revised (OCI-R) developed and validated by Foa et al. (2002). It is a self-administered survey tool that measures distress caused by various OCD symptoms measured across 6 subscales (washing, checking, neutralizing, obsessing, ordering, and hoarding) (Wootton et al., 2015). The OCI-R represents a streamlined version of the original OCI evaluation system, comprising 42 questions. It helps find OCD cases, but experts need separate tests to determine the final diagnosis (Taher et al., 2021).

The 18 items were grouped into 6 subscales with 3 items each. However, the 18 items are presented in mixed order (not according to the subscales) so that the participants are not biased by grouping. Washing includes items 5,11, and 17. Checking items are items 2,8, and 14. Hoarding is items 1,7, and 13. Ordering items are 3,9, and 15. Obsessing, on the other hand, are items 6,12, and 18. Lastly, neutralizing items are 4,10, and 16. Participants used a 5-point Likert scale from 0 to 4 (0 = Not at all, 1 = A little, 2 = Moderately, 3 = A lot, 4 = Extremely) to rate their experience. The respondent is expected to indicate how much, over the past month, the experience described by the questionnaire item distressed or bothered

them. The total score of the OCI-R ranges from 0 (if the participant rated all 18 items as 0) to 72 (if the participant rated all 18 items as 4), whereas the total score for each subscale is between 0-12, where higher scores indicate greater severity of symptoms. A score of 21 and above on the OCI-R total score is often used as a threshold for identifying clinically significant obsessive-compulsive symptoms (Foa et al., 2002). Research has proven that the OCI-R stands as a reliable and valid instrument for assessment. It also works well with both medical and non-medical groups across different cultures through its different language versions (Simos et al., 2019).

The study employed Section C, which contains 21 emotion items from a scale created by Lovibond & Lovibond (1995) called the Depression, Anxiety, and Stress Scale-21 (DASS-21). The shortened DASS uses 21 items from its full 42-item version. The test measures specific negative feelings, including depression, anxiety, and stress, through its 21-item assessment. Every DASS-21 subscale (depression, anxiety, and stress) feature seven items and participants rank their daily experiences over a week using a 4-point Likert scale that ranges from 0 (not related to me at all) to 3 (applied to me very much or most of the time) (Lovibond & Lovibond, 1995). Depression subscales include items 3, 5, 10, 13, 16, 17, and 21. Anxiety items are 2, 4, 7, 9, 15, 19, and 20. Lastly, stress items include 1, 6, 8, 11, 12, 14, and 18.

Based on the DASS-21 scoring system, the findings will fall into five severity levels that range from normal to extremely severe. Each stage assigns a specific score range for depression, anxiety, and stress measurements as shown in Table 3.1 below. Research studies across many populations use DASS-21 because it shows reliable results and creates easy data collection across multiple study populations. It provides a quick assessment of mental

health symptoms, making it a valuable tool for both practitioners and researchers. The DASS-21 questionnaire is available in the public domain to be used.

The questionnaire was conducted online through Google Forms. The link to the questionnaire was distributed to the nursing students through WhatsApp messaging. Before starting the survey, PIS and informed consent were provided (refer to Appendix B) to explain the study details and obtain participant permission. Statistical Package for the Social Sciences (SPSS) version 27 software is used to analyse all collected data.

Table 3.1: Total scores for depression, anxiety, and stress levels

Level	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
Extremely severe	>28	>20	>34

(Lovibond & Lovibond, 1995)

3.7 Ethical Consideration

The study obtained an ethical approval letter from the Research Ethics Committee at UNIMAS's Faculty of Medicine and Health Sciences (FMHS) before conducting the study (refer to Appendix A). Besides, permission to use the questionnaire (OCI-R) was obtained from the original author before using the questionnaire through email (refer to Appendix D). Furthermore, the privacy and confidentiality of the respondents are maintained throughout the study by enclosing the questionnaire with a participant information sheet (PIS) and informed consent forms (refer to Appendix B) for the respondents. The PIS is provided to ensure participants are informed of the research aims and help them understand how their data will be kept private throughout the study. A researcher must obtain consent from participants to show their agreement to participate in the study. Consent is received once participants click the agree box in the Google Form under participant informed consent.

Therefore, participants may choose to drop out of the study at any point and face no penalties after providing clear information to the participants on how the data will be utilized. This shows that principal autonomy is applied. Besides, serial numbers instead of names of participants are used to identify the participants, even though personally identifiable information such as email addresses was collected to distribute the informed consent. Moreover, the devices that keep all the data throughout the study are password-protected, which only the researcher and the supervisor can access to keep the data secure and prevent unauthorized access. Nobody except the researcher can assess the data collected in the online questionnaire to keep the data confidential, and no personal identifying information was asked for or revealed.

3.8 Pilot Study

After getting research ethics approval through the Research Ethics Committee, a pilot study was carried out to test the accuracy and usefulness of the study tools. From a pilot study, the researcher received feedback from participants concerning the clarity of the questionnaires for improvements. Therefore, it is essential to increase the quality and efficiency of the actual study. It was conducted by having 10% of the sample size, which was 16 of 164 UNIMAS nursing students who fulfilled the inclusion criteria to answer the same study instruments for the actual study before the actual data collection process began (Yamane, 1973). It was carried out via simple random sampling, which is the same sampling method used in the actual study. The chosen 10% of participants ($n=16$) are omitted from the primary data collection and analysis. The data gathered throughout the pilot study were transferred and analysed in Statistical Package for Social Sciences (SPSS) version 27 to ensure that the study instruments were valid and reliable. Cronbach's alpha value from the pilot test is used to measure the instrument's consistency and reliability, where a value approaching 0.70 or higher indicates a good internal consistency (Taber, 2017).

3.8.1 Reliability Test

In a study, reliability testing refers to the procedure of assessing the result's consistency obtained from an instrument tool over multiple tests, indicating the ability of a test to produce similar results under different circumstances (Karnia, 2024). To check reliability, researchers can employ multiple tests, like test-retest reliability and interrater reliability, together with internal consistency tests (Babu & Kohli, 2023). This pilot study's reliability is quantified using reliability coefficients, which are Cronbach's alpha. It is widely used in management sciences to assess internal consistency (Olayinka & Abideen, 2023).

Cronbach's alpha values of 0.7 and higher imply an acceptable value for internal consistency (Taber, 2017). Cronbach's alpha values are excellent if they are more than 0.90 and good in the range of 0.80 to 0.89. However, for items less than 10, a Cronbach's alpha value of more than 0.5 is acceptable (Pallant, 2020). The six subscales in OCI-R, with 3 items each, exhibited strong internal consistency, with four of the six coefficients surpassing 0.7. The two exclusions were the coefficient alphas for the hoarding and neutralizing subscales, which are 0.234 and 0.573, respectively. The overall OCI-R scale, however, shows a good coefficient, which is 0.868. Thus, the OCI-R appears to be a reliable instrument.

For the DASS-21 scale, which consists of 3 subscales with 7 items each, the depression subscale displayed a good internal consistency level of 0.853, and the stress subscale showed an acceptable reliability level of 0.787. However, the anxiety subscale exhibited an exclusion for a good Cronbach's alpha value, which is 0.340, indicating a poor reliability level. Although one of the subscales did not achieve a 0.70 coefficient value, the overall DASS-21 scale achieved a good internal consistency of 0.876. The Cronbach's alpha values are presented in Table 3.2. Establishing reliability is crucial for the credibility and trustworthiness of research findings, as it supports the validity of the conclusions drawn from the data (Karnia, 2024).

Table 3.2: Coefficient Alphas for the OCI-R Subscales, DASS-21 Subscales, and Overall Scales

Questionnaire	Subscales	Cronbach's alpha
OCI-R	Washing	0.828
	Checking	0.781
	Hoarding	0.234
	Ordering	0.890
	Obsessing	0.700
	Overall OCI-R	0.868
DASS-21	Neutralizing	0.573
	Depression	0.853
	Anxiety	0.340
	Stress	0.787
	Overall DASS-21	0.876

3.8.2 Validity Test

In research, validity refers to how correctly a test measures what it is intended to assess. The key components for validating the Obsessive-Compulsive Inventory-Revised (OCI-R) include evaluating its factor structure, reliability, and various forms of validity, such as convergent and divergent validity. The factor structure is crucial as it confirms the dimensions the inventory is intended to measure, which in OCI-R, includes six factors (washing, obsessing, hoarding, ordering, checking, and neutralizing) (Koike et al., 2017). Researchers discovered that the OCI-R measurement system contains consistent core components in all participating groups (Foa et al., 2002).

Studies proved the OCI-R's validity by showing strong links with recognized measures of obsessive-compulsive symptoms when tested alongside the Maudsley Obsessional-Compulsive Inventory (MOCI), Yale-Brown Obsessive-Compulsive Scale (Y-BOCS), and National Institute of Mental Health Global Obsessive-Compulsive Scale (GOCS) (Foa et al., 2002). All OCD tests, including Y-BOCS, GOCS, and MOCI, showed direct relationships with the OCI-R total scores. Research studies in various cultural settings and on the psychometric properties of OCI-R consistently find that this test distinguishes well between different groups (discriminant validity) (Hajcak et al., 2004; Fullana et al., 2005; Sica et al., 2009; Smári et al., 2007; Woo et al., 2010). Simos et al. (2019) assessed divergent validity by looking at how much the Obsessive-Compulsive Inventory-Revised (OCI-R) scores differed from those on the Depressive Anxiety Stress Scales - 21 (DASS-21) test results. Data revealed the depression scale related weakly to OCI-R while showing moderate connections with anxiety and stress scores.

For DASS-21, Osman et al. (2012) tested construct validity by studying college students. The original three-factor model of depression, anxiety, and stress received support through Confirmatory Factor Analysis, giving results of CFI=0.95 and RMSEA=0.05. Furthermore, the scale demonstrated high convergent validity with substantial correlations to the Beck Depression Inventory-II (BDI-II) and the Beck Anxiety Inventory (BAI). Discriminant validity was also demonstrated, with moderate rather than extremely high correlations across the three subscales, indicating that the constructs are linked but distinct. Overall, validity testing is essential for ensuring that research instruments are trustworthy and that their findings are meaningful and applicable (Ansari & Khan, 2023; Olanipekun et al., 2022).

3.9 Data Collection Procedure

The data gathering procedure commenced after the Research Ethics Committee of the Faculty of Medicine and Health Sciences (FMHS), UNIMAS, provided an ethical permission. The name list of nursing students from each cohort was obtained from the nursing course coordinator to confirm the number of students from each cohort. The students who meet the study's inclusion requirements are selected. The next step is to choose the study approach, which is a simple random sampling method. The selected participants are numbered according to alphabetical order in their respective cohort, and Microsoft Excel was used to randomize the names with an equal chance probability that the first 164 names are selected to participate.

Following that, pilot research was done with 10% of the projected sample size (n=16) taking part. It was carried out to assess the reliability and validity of the study tools used and analyse feedback from the participants to improve the study instruments, ensuring accurate

results during actual data collection. Participants in the pilot study were eliminated from the main study. Since the questionnaire was conducted online via Google Forms, the link to the questionnaire was established and distributed to every class representative of each cohort. Before proceeding with answering the questionnaire, PIS and informed consent on the first page of the Google Form were included to be read and completed, ensuring participants understand the study's objectives and consent is given to participate.

Roughly 15-20 minutes is needed to complete the questionnaire. Every question was marked as compulsory to answer by putting the 'required' in the setting for each question. After the first round of distribution, the participants who did not answer the questionnaire were followed up once, and participants who did not respond to this action were considered withdrawn from the study. All the obtained data were computed and evaluated in the IBM SPSS version 27 software. The data collection procedure is presented in a flowchart (Figure 3.2) for a clearer and simplified picture of how it is conducted.

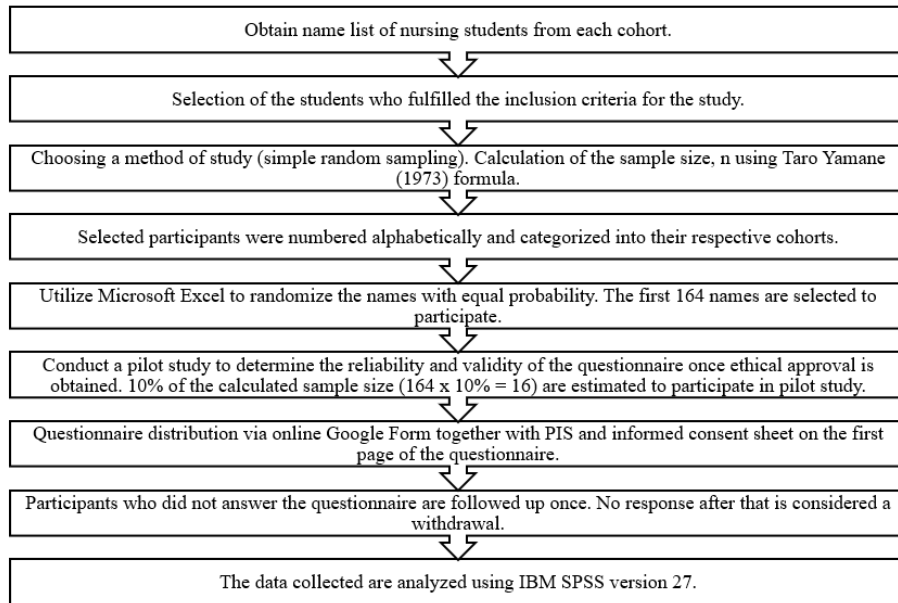


Figure 3.2: Data collection procedure

3.10 Data Analysis Method

Data entry and analysis of the collected data were done using IBM SPSS Statistics version 27. For Section A, descriptive statistics are used to analyze the data, as all the variables are categorical. However, gender, religion, and race are nominal categorical variables that are reported in frequencies and percentages and presented in a bar chart, whereas year of study, age, and GPA average, which are ordinal categorical data, are reported in medians, modes, or frequencies. For Section B, the scores for the six subscales, as well as the total OCI-R score, are computed. Descriptive statistics were then summarized for the OCI-R total score and subscale scores to get measures like mean, median, and standard deviation. A reliability test for OCI-R and DASS-21 was also done in SPSS to get the value of Cronbach's alpha and measure the internal consistency. A normality test was done for continuous data from Section B and Section C of the questionnaire to determine the data distribution and inferential statistics, in which the Kolmogorov-Smirnov test was applied since the sample size is more than 50 participants. A p-value of 0.05 and above retains normal distribution yet lacks statistical significance, while p-values under 0.05 show deviation from normal distribution but achieve statistical significance.

To get the prevalence of obsessive-compulsive behaviors, a cut-off variable was made on the total OCI-R score since a total OCI-R score of 21 or more is often used as a threshold for identifying clinically significant obsessive-compulsive symptoms (a value of 21 and above= Indicates clinically significant symptoms and a value of 20 and below = Indicates no clinically significant symptoms) (Foa et al., 2002). Frequency analysis was done for the cut-off variable. The output shows the frequency and percentage of participants who meet the cut-off, indicating the prevalence of obsessive-compulsive behaviours. This, at the same time, can compare prevalence by demographic groups (e.g., gender or age) by running

descriptive statistics and crosstabs, putting cut-off variables in the rows and demographic variables in the columns. Moreover, a statistical analysis can also be done using the Chi-Square test to compare the prevalence between groups. A p-value determines whether the differences in prevalence between groups are statistically significant.

For Section C (DASS-21 questionnaire), the total score for each subscale in DASS-21 was computed. The total raw scores for each subscale are multiplied by 2 to generate end scores using the official DASS-21 rating methods. These end scores were then categorized into 5 severity levels, which are normal, mild, moderate, severe, and extremely severe, as shown in Table 3.1. After that, descriptive statistics are used to generate frequency tables (frequency analysis) showing the number and percentage of participants in each severity category. To calculate overall prevalence, a binary variable was created (e.g., “Depressed” vs. “Not Depressed”) with participants whose scores in the “Mild” or higher categories are considered to have symptoms (mild or above = presence of symptoms, normal = absence of symptoms). A cut-off point was made to the scores of mild and above to indicate the presence of symptoms (depression, anxiety, and stress). Next, frequency analysis was performed on the binned variables to calculate the prevalence rate. To determine the prevalence of the symptoms (depression, anxiety, and stress) across demographic groups, crosstabs are used by putting categorized variables (depression) into rows and demographic variables (gender) into columns. A Chi-Square test can be employed to see whether there are any significant differences.

The correlation between obsessive-compulsive behaviours (OCI-R total score) and mental health status (DASS-21 total score) was analysed using the non-parametric Spearman’s rank correlation test since one of the scales deviates from a normal distribution.

The correlation coefficients, r-values, will determine the strength of the correlation between two variables, with an r-value of 0.10 to 0.29 indicating a weak correlation, 0.30 to 0.49 indicating a moderate correlation, and an r-value of more than 0.50 showing a strong correlation. The p-value (significance level) will determine whether the correlation is statistically significant or not.

3.11 Summary

To sum up, this chapter has described the methodology used to fulfill the objectives of this study. From study design up to the data analysis methods that are used to analyze the results, which are further discussed in the next chapter. This study was conducted quantitatively with a cross-sectional study design at the Faculty of Medicine and Health Science (FMHS), Universiti Malaysia Sarawak (UNIMAS), involving all undergraduate UNIMAS nursing students who fulfilled the inclusion criteria. Simple random sampling was used to select the sample size. 164 participants were chosen to participate in this study. The method of answering the questionnaire was online via Google Forms. All collected data were analyzed in SPSS version 27 using descriptive statistics such as frequency, percentage, mean, median, and standard deviation. Inferential statistics, specifically Spearman's rank correlation, is used to examine the correlation between obsessive-compulsive behaviors and mental health status.

CHAPTER 4

Results

4.0 Introduction

This chapter discusses the results of the questionnaire, which consists of three sections: sociodemographic data, the OCI-R scale to measure obsessive-compulsive behaviors, and the results from the DASS-21 scale to assess the mental health status of undergraduate UNIMAS nursing students. The main point is to show the result of the relationship between obsessive-compulsive behaviors and mental health status among UNIMAS undergraduate nursing students. The results were described based on data analysis conducted using SPSS version 27 to provide a comprehensive view of the findings.

4.0.1 Response rate

Out of 164 participants who were invited to complete the online study survey, 2 (1.22%) participants failed to complete it, resulting in a final total of 162 (98.78%) participants.

4.0.2 Reliability

The reliability of the OCI-R scale is found to be excellent (18 items; $\alpha = .941$). The reliability of the DASS-21 scale is found to be excellent (21 items; $\alpha = .957$).

4.1 Socio-demographic characteristics of participants

The overall result for socio-demographic data for this study has been tabulated in Table 4.1 below.

Table 4.1: Distribution of participants by socio-demographic variables (n=162)

Socio-demographics	Frequency (n)	Percentage (%)	Median	Mode
Age group			2	2
less than or 20 years old	35	21.6		
21-30 years old	127	78.4		
Gender				
Male	28	17.3		
Female	134	82.7		
Religion				
Islam	97	59.9		
Christian	63	38.9		
Hindu	1	0.6		
Buddhist	1	0.6		
Race				
Malay	74	45.7		
Chinese	7	4.3		
India	1	0.6		
Bumiputera Sarawak	50	30.9		
Bumiputera Sabah	30	18.5		
Year of study			2	2
Year 1	40	24.7		
Year 2	47	29.0		
Year 3	39	24.1		
Year 4	36	22.2		
GPA average (last semester)			2	2
3.50-4.00	54	33.3		
3.00-3.49	89	54.9		
2.50-2.99	18	11.1		
2.00-2.49	1	0.6		

I. Age group

There are no outliers or extreme values from screening the data. Out of 162 participants, 35 (21.6%) are less than or 20 years old and 127 (78.4%) of them are 21 to 30 years old. The median and mode are 2.

II. Gender

There are no outliers or extreme values from screening the data. Out of 162 participants, 28 (17.3%) were male and 134 (82.7%) of them were female.

III. Religion

There are no outliers or extreme values from screening the data. Out of 162 participants, 97 (59.9%) are Islam, 63 (38.9%) are Christian and 1 (0.6%) for both Hindu and Buddhist.

IV. Race

There are no outliers or extreme values from screening the data. Out of 162 participants, 74 (45.7%) are Malay, 7 (4.3%) are Chinese, 1 (0.6%) is Indian, 50 (30.9%) are Bumiputera Sarawak and 30 (18.5%) of them are Bumiputera Sabah.

V. Year of study

There are no outliers or extreme values from screening the data. Out of 162 participants, 40 (24.7%) are Year 1, 47 (29.0%) are Year 2, 39 (24.1%) are Year 3, and 36 (22.2%) are from Year 4. The median and mode are 2.

VI. GPA average (last semester)

There are no outliers or extreme values from screening the data. Out of 162 participants, 54 (33.3%) scored a GPA of 3.50-4.00, 89 (54.9%) scored 3.00-3.49, 18 (11.1%) scored 2.50-2.99, and 1 (0.6%) of them scored 2.00-2.49. The median and mode are 2.

4.2 Prevalence of obsessive-compulsive behaviours

I. Obsessive-compulsive behaviours total score

The box plot for the total OCI-R score does not note outliers or extreme values. A Kolmogorov-Smirnov test showed a significant normal distribution, $D(162) = .067$, $p = .076$. The OCI-R total score had a mean ($M = 29.65$, $SD = 14.79$).

Table 4.2: Descriptive statistic and normality test for total OCI-R score

Variable	Mean, M	Std. Deviation, SD	Kolmogorov-Smirnov ^a		
			Statistic	df	Sig. (p -value)
Total OCI-R Score	29.6481	14.79276	.067	162	.076

Note: a: Lilliefors Significance Correction, df : degrees of freedom

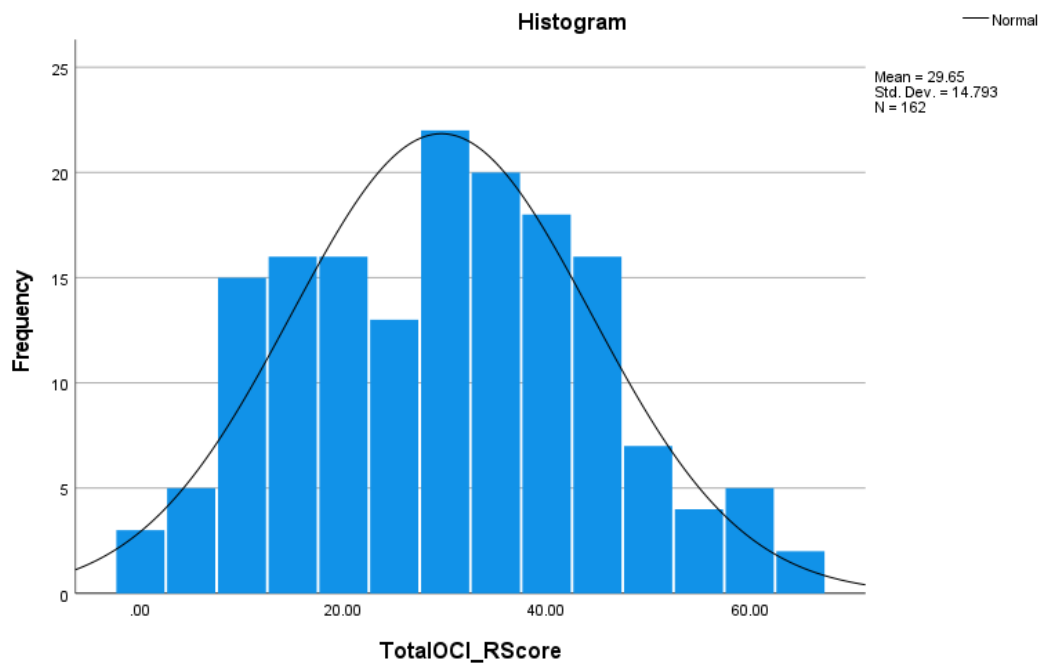


Figure 4.1: Histogram of total OCI-R score

The OCI-R total score was recorded and used to calculate the prevalence of obsessive-compulsive behaviours using visual binning in SPSS. The prevalence is measured using a cut-off point of 21 from the OCI-R total score as a threshold for identifying clinically significant obsessive-compulsive symptoms. This threshold was determined through visual binning, where a score of 21 and above indicates clinically significant symptoms, and a score of 20.00 and below indicates no clinically significant symptoms. Out of 162 participants, it was revealed that 52 (32.1%) of participants have no clinically significant symptoms, while 110 (67.9%) of them have clinically significant symptoms. Therefore, 110 (67.9%) out of 162 participants have obsessive-compulsive behaviours.

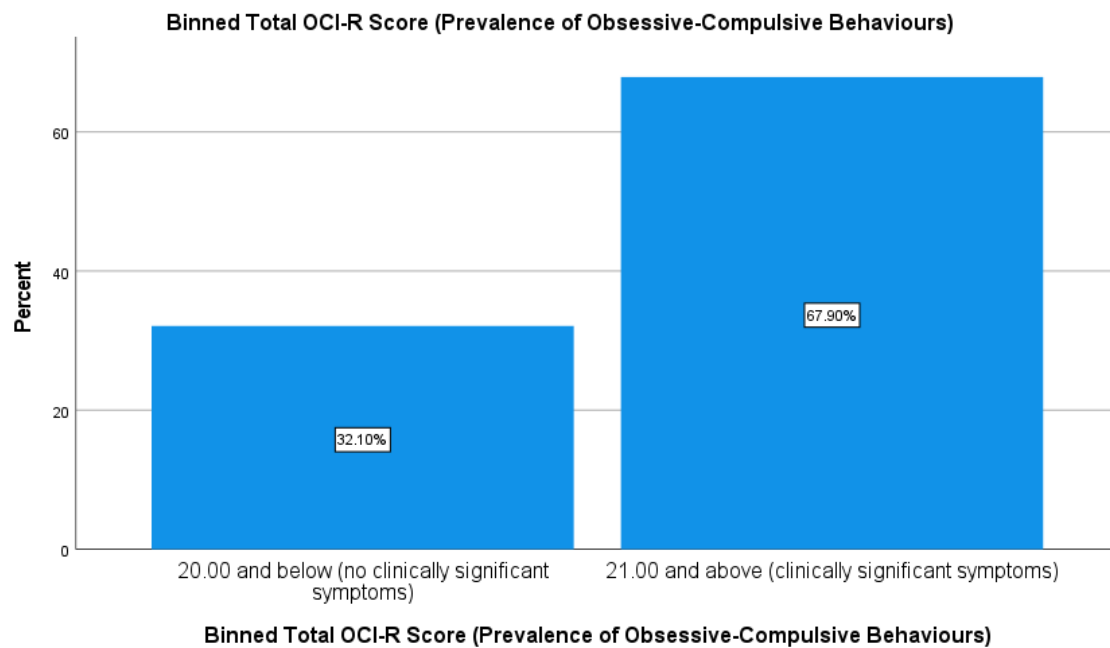


Figure 4.2: Bar Chart on the Prevalence of Obsessive-Compulsive Behaviours (Binned Total OCI-R Score)

II. OCI-R Subscales Total Score

The OCI-R is grouped into 6 subscales, each with 3 items: washing, checking, hoarding, ordering, obsessing, and neutralizing. The scores for each subscale range from 0 to 12. There are no outliers or extreme values noted from the box plot for all 6 subscales. A Kolmogorov-Smirnov test showed a significant departure from normality for all 6 subscales, $D(162) = .099, p = <.001$ for total washing score, $D(162) = .100, p = <.001$ for total checking score, $D(162) = .094, p = .001$ for total hoarding score, $D(162) = .090, p = .003$ for total ordering score, $D(162) = .127, p = <.001$ for total obsessing score and $D(162) = .120, p = <.001$ for the total neutralizing score.

The median for total washing score is 4 points ($IQR = 5$ points), 5 points ($IQR = 4$ points) for total checking score, 6 points ($IQR = 4$ points) for total hoarding score, 6 points ($IQR = 5$ points) for total ordering score, 4.5 points ($IQR = 4.0$ points) for total obsessing

score, and 4 points ($IQR = 5$ points) for total neutralizing score. The maximum score is 12 points, while the minimum score is 0 points for all 6 subscales. The range is 12 points for all 6 subscales.

The mode score is 3 points for the total washing score, 6 points for the total checking score, total hoarding score, and total ordering score, 4 points for the total obsessing score, and 0 points for the total neutralizing score.

Table 4.3: Normality test for total OCI-R subscale scores

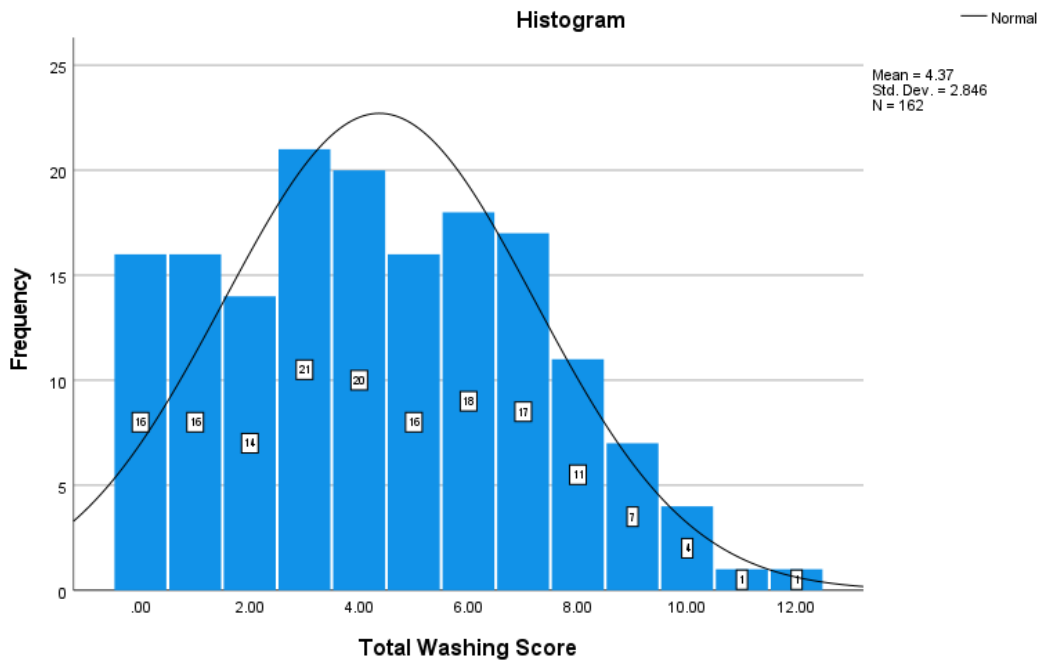
	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig. (p -value)
Total Washing Score	.099	162	<.001
Total Checking Score	.100	162	<.001
Total Hoarding Score	.094	162	.001
Total Ordering Score	.090	162	.003
Total Obsessing Score	.127	162	<.001
Total Neutralizing Score	.120	162	<.001

Note: a: Lilliefors Significance Correction, df : degrees of freedom

Table 4.4: Descriptive statistic for total OCI-R subscale scores

Variables	<i>Mdn</i>	<i>IQR</i>	Max	Min	Range	Mode
Total Washing Score	4	5	12	0	12	3
Total Checking Score	5	4	12	0	12	6
Total Hoarding Score	6	4	12	0	12	6
Total Ordering Score	6	5	12	0	12	6
Total Obsessing Score	4.5	4	12	0	12	4
Total Neutralizing Score	4	5	12	0	12	0

Notes: *Mdn*: Median, *IQR*: Interquartile Range, Max: Maximum Score, Min: Minimum Score

**Figure 4.3:** Histogram of total washing score

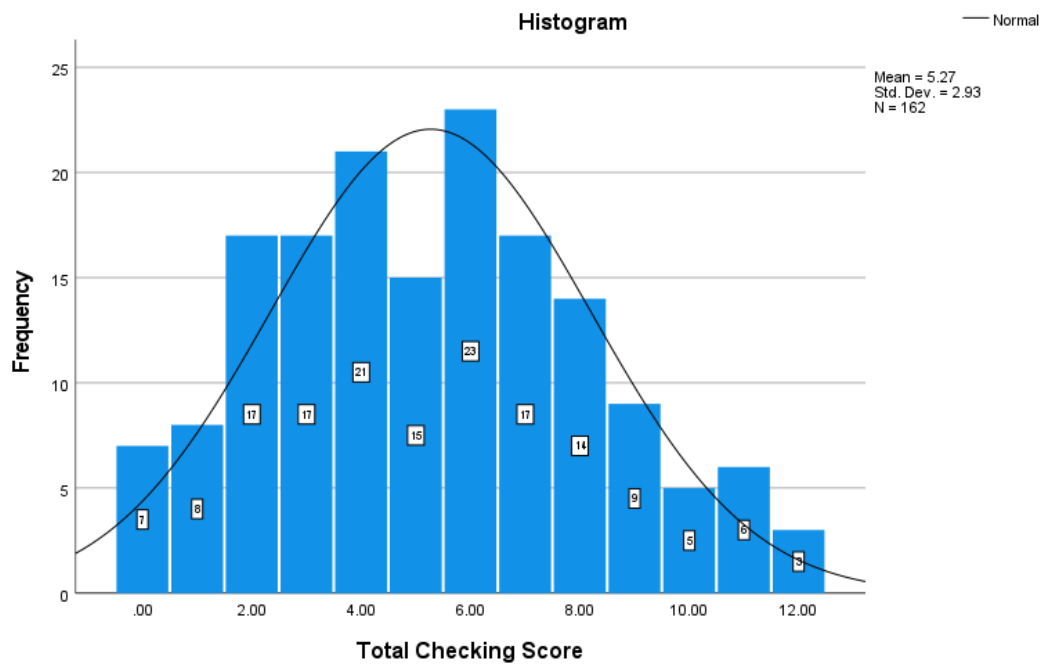


Figure 4.4: Histogram of total checking score

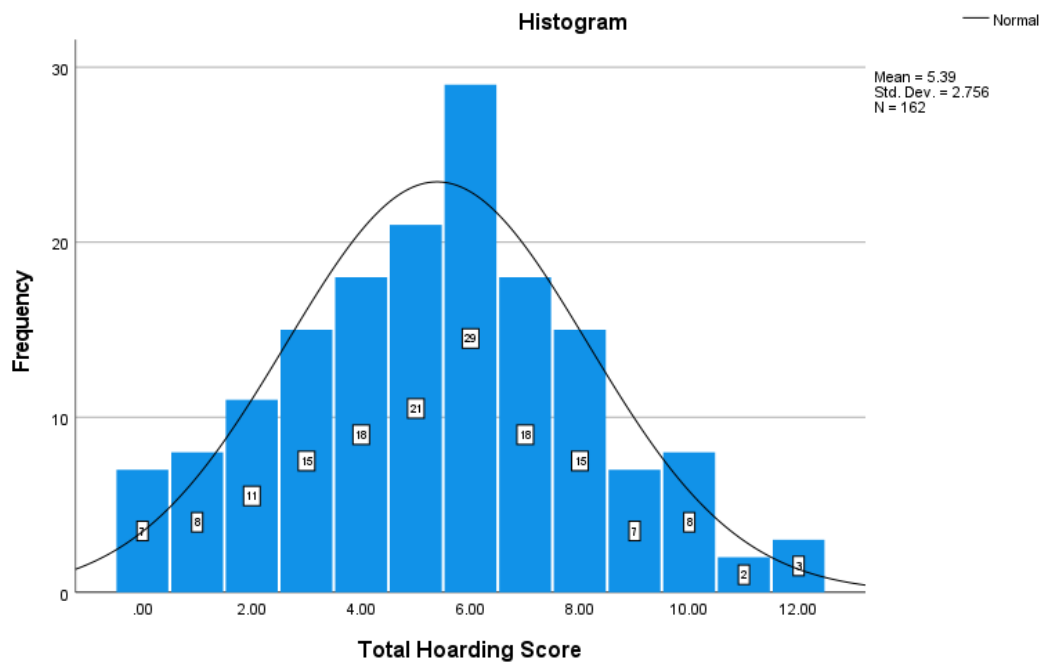


Figure 4.5: Histogram of total hoarding score

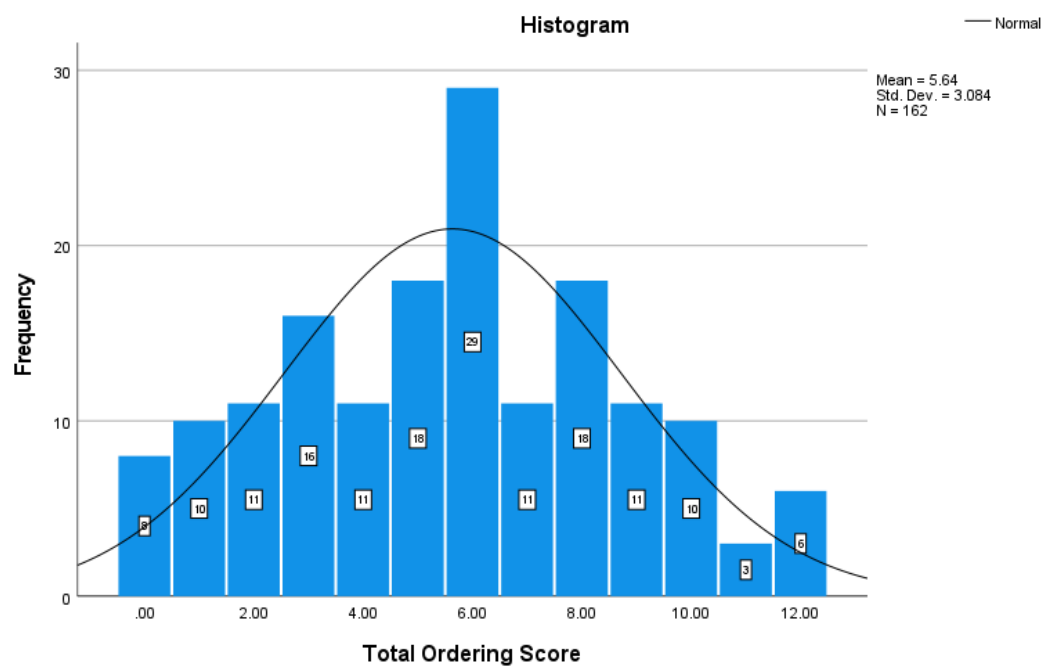


Figure 4.6: Histogram of total ordering score

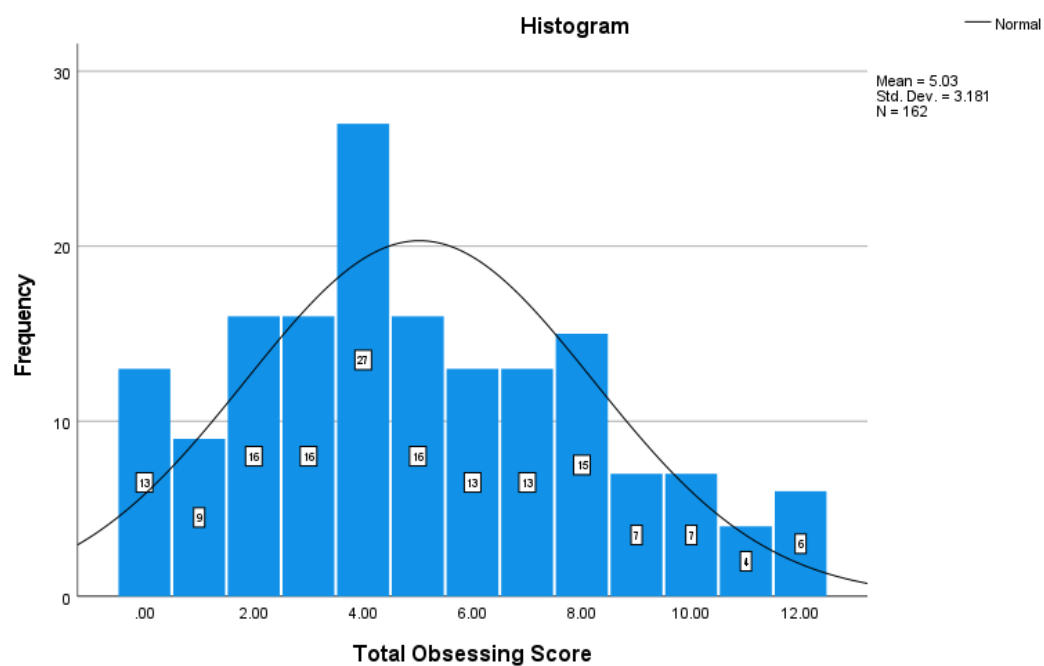


Figure 4.7: Histogram of total obsessing score

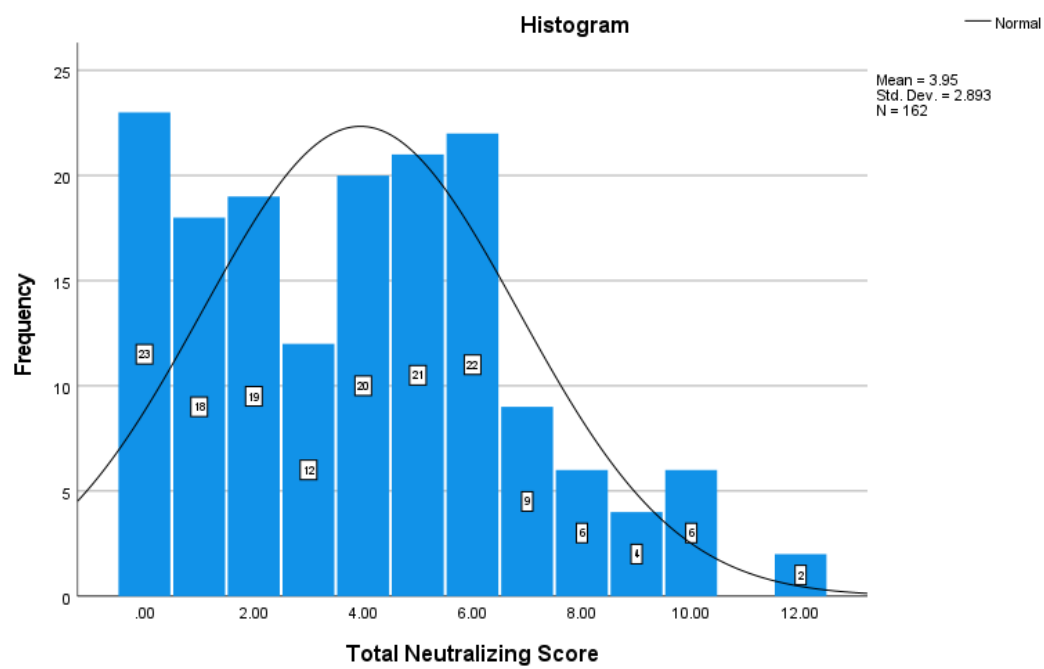


Figure 4.8: Histogram of total neutralizing score

III. Prevalence of Obsessive-Compulsive Behaviours by Demographic Groups

Table 4.5: Obsessive-compulsive behaviours and Age Group Crosstabulation

		Age Group		Total
		less than or 20 years old	21-30 years old	
TotalOCI-RScore (Binned)	20.00 and below (no clinically significant symptoms)	5 (9.6%)	47 (90.4%)	52 (100%)
	21.00 and above (clinically significant symptoms)	30 (27.3%)	80 (72.7%)	110 (100%)
Total		35 (21.6%)	127 (78.4%)	162 (100%)

Table 4.5 shows the prevalence of obsessive-compulsive behaviours by age group. Out of 35 participants who were less than and 20 years old, 30 (27.3%) showed clinically significant symptoms of obsessive-compulsive behaviours (OCBs) and only 5 (9.6%) did not show clinically significant symptoms of OCBs. For 127 (78.4%) participants who are 21-30 years old, 80 (72.7%) have clinically significant symptoms of OCBs, and 47 (90.4%) did not.

Table 4.6: Obsessive-compulsive behaviours and Gender Crosstabulation

		Gender		Total
		male	female	
TotalOCI-RScore (Binned)	20.00 and below (no clinically significant symptoms)	10 (19.2%)	42 (80.8%)	52 (100%)
	21.00 and above (clinically significant symptoms)	18 (16.4%)	92 (83.6%)	110 (100%)
Total		28 (17.3%)	134 (82.7%)	162 (100%)

Table 4.6 shows the prevalence of obsessive-compulsive behaviours by gender. Out of 28 (17.3%) male participants, 18 (16.4%) had clinically significant symptoms of OCBs, and 10 (19.2%) did not. Females have more prevalence of obsessive-compulsive behaviours than males, which is 92 (83.6%) out of 134 (82.7%). Meanwhile, 42 (80.8%) out of 134 females did not have clinically significant OCBs.

Table 4.7: Obsessive-compulsive behaviours and Religion Crosstabulation

		Religion				Total
		islam	christian	hindu	buddhist	
TotalOCI-RScore (Binned)	20.00 and below (no clinically significant symptoms)	25 (48.1%)	26 (50.0%)	0 (0.0%)	1 (1.9%)	52 (100%)
	21.00 and above (clinically significant symptoms)	72 (65.5%)	37 (33.6%)	1 (0.9%)	0 (0.0%)	110 (100%)
Total		97 (59.9%)	63 (38.9%)	1 (0.6%)	1 (0.6%)	162 (100%)

Table 4.7 shows the prevalence of obsessive-compulsive behaviours by religion. Out of 97 (59.9%) Islam participants, 72 (65.5%) showed clinically significant symptoms of OCBs, and 25 (48.1%) did not. For 63 (38.9%) Christian participants, 37 (33.6%) showed OCBs while 26 (50.0%) did not. There are only 1 (0.6%) participants for each Hindu and Buddhist. That one Hindu participant accounted for 0.9% prevalence of obsessive-compulsive behaviours, while the other one, who is Buddhist, did not show clinically significant OCBs.

Table 4.8: Obsessive-compulsive behaviours and Race Crosstabulation

		Race					Total
		Malay	Chinese	India	Bumiputera sarawak	Bumiputera sabah	
TotalOCI-RScore (Binned)	20.00 and below (no clinically significant symptoms)	22 (42.3%)	3 (5.8%)	0 (0.0%)	18 (34.6%)	9 (17.3%)	52 (100%)
	21.00 and above (clinically significant symptoms)	52 (47.3%)	4 (3.6%)	1 (0.9%)	32 (29.1%)	21 (19.1%)	110 (100%)
Total		74 (45.7%)	7 (4.3%)	1 (0.6%)	50 (30.9%)	30 (18.5%)	162 (100%)

Table 4.8 shows the prevalence of obsessive-compulsive behaviours by race. Out of 162 participants, those who were Malay showed the highest prevalence of obsessive-compulsive behaviours, which is 52 (47.3%) out of 74 (45.7%) Malay participants, followed by Bumiputera Sarawak at 32 (29.1%) out of 50 (30.9%) Bumiputera Sarawak participants and Bumiputera Sabah at 21 (19.1%) out of 30 (18.5%) Bumiputera Sabah participants.

Chinese and India are lower, which are 4 (3.6%) out of 7 (4.3%) and 1 (0.9%) out of 1 (0.6%), respectively.

Table 4.9: Obsessive-compulsive behaviours and Year of study Crosstabulation

		Year of study				
		year 1	year 2	year 3	year 4	Total
TotalOCI- RScore (Binned)	20.00 and below (no clinically significant symptoms)	5 (9.6%)	17 (32.7%)	13 (25.0%)	17 (32.7%)	52 (100%)
	21.00 and above (clinically significant symptoms)	35 (31.8%)	30 (27.3%)	26 (23.6%)	19 (17.3%)	110 (100%)
Total		40 (24.7%)	47 (29.0%)	39 (24.1%)	36 (22.2%)	162 (100%)

Table 4.9 shows the prevalence of obsessive-compulsive behaviours by year of study. Year 1 showed the highest prevalence of obsessive-compulsive behaviours (OCBs), which is 35 (31.8%) out of 40 (24.7%) year 1 participants, followed by year 2 at 30 (27.3%) out of 47 (29.0%) and year 3 at 26 (23.6%) out of 39 (24.1%). Year 4 had the lowest prevalence of OCBs, which is 19 (17.3%) out of 36 (22.2%) year 4 participants.

Table 4.10: Obsessive-compulsive behaviours and GPA average (last semester)
Crosstabulation

		GPA average (last semester)				
		3.50-4.00	3.00-3.49	2.50-2.99	2.00-2.49	Total
TotalOCI- RScore (Binned)	20.00 and below (no clinically significant symptoms)	22 (42.3%)	23 (44.2%)	7 (13.5%)	0 (0.0%)	52 (100%)
	21.00 and above (clinically significant symptoms)	32 (29.1%)	66 (60.0%)	11 (10.0%)	1 (0.9%)	110 (100%)
Total		54 (33.3%)	89 (54.9%)	18 (11.1%)	1 (0.6%)	162 (100%)

Table 4.10 shows the prevalence of obsessive-compulsive behaviours by GPA average (last semester). Those who scored a GPA of 3.00-3.49 in the last semester showed the highest incidence of OCBs, which is 66 (60.0%) out of 89 (54.9%) participants who scored GPA of 3.00-3.49, than those who scored 3.50-4.00, which is 32 (29.1%) out of 54 (33.3%) and those with a GPA 2.50-2.99, which is 11 (10.0%) out of 18 (11.1%). The only 1 (0.6%) participant who scored a GPA of 2.00-2.49 showed OCBs, which gives 0.9% to the OCBs prevalence.

4.3 Mental health status of participants

I. Mental Health Status Total Score (DASS-21 Total Score)

There are outliers identified from the box plot for the total DASS-21 score. Outliers were then addressed using the Winsorization method which involved replacing the values that fell outside the upper and lower thresholds with the nearest non-outliers value. This is to minimize the influence of extreme data points while maintaining the integrity of the dataset's overall distribution. The data were then reanalysed to make sure there were no outliers, and these new values were used in the subsequent statistical test. A Kolmogorov-Smirnov test showed a significant departure from normality, $D(162) = .103, p = <.001$. The median score among the participants is 16.50 points ($IQR = 19.25$ points). The maximum score is 54 points while the minimum score is 0 points. The range is 54 points. The mode score is 0 points.

Table 4.11: Normality test for total DASS-21 score

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig. (<i>p</i> -value)
Total DASS-21 Score	.103	162	<.001

Note: a: Lilliefors Significance Correction, *df*: degrees of freedom

Table 4.12: Descriptive statistic for total DASS-21 score

Variables	<i>Mdn</i>	<i>IQR</i>	Max	Min	Range	Mode
Total DASS-21 Score	16.50	19.25	54.00	0.00	54.00	0

Notes: *Mdn*: Median, *IQR*: Interquartile Range, Max: Maximum Score, Min: Minimum Score

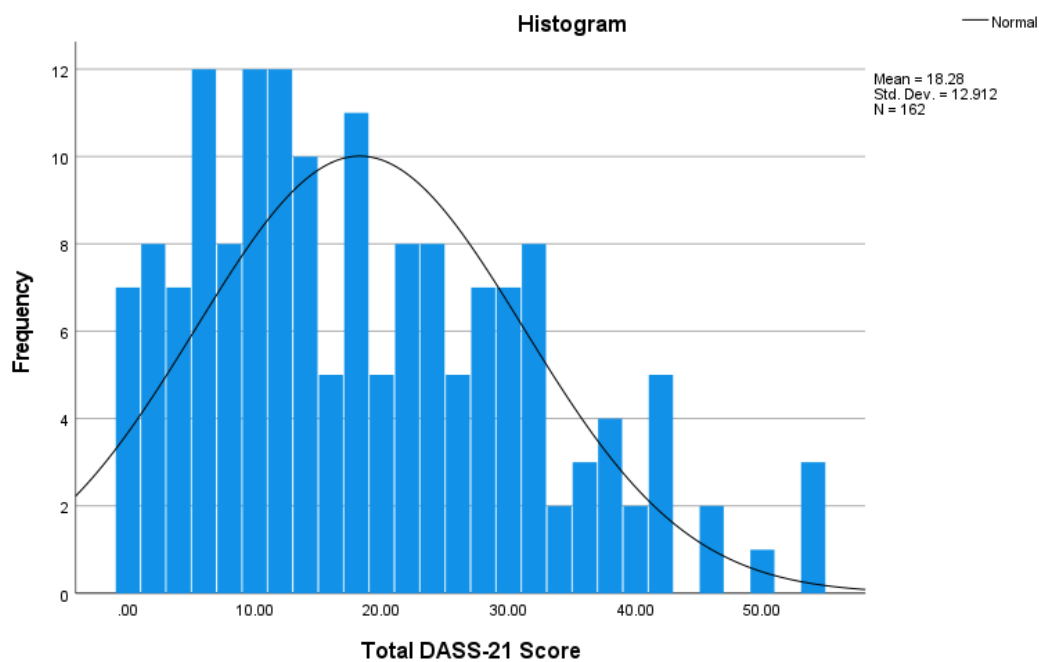


Figure 4.9: Histogram of total DASS-21 score

II. Mental Health Status (DASS-21) Subscales Total Score

The DASS-21 is grouped into 3 subscales, each with 7 items: depression, anxiety, and stress. The maximum score for each subscale was originally 21 but the total raw scores of each subscale were multiplied by 2 to generate the end scores as per official DASS-21 rating methods. Therefore, the scores for each subscale range from 0 to 42. There are no outliers or extreme values noted from the box plot for all 3 subscales. A Kolmogorov-Smirnov test showed a significant departure from normality for all 3 subscales, $D(162) = .160, p = <.001$ for total depression score, $D(162) = .102, p = <.001$ for total anxiety score and $D(162) = .106, p = <.001$ for total stress score.

The median for total depression score is 8 points ($IQR = 14$ points) and 12 points ($IQR = 14$ points) for both anxiety and stress total scores. The maximum score is 42 points, while the minimum score is 0 points for depression and stress subscales. The maximum score is 40 points, while the minimum score is 0 points for the anxiety subscale. The range is 42 points for depression and stress subscales and 40 points for anxiety subscales. The mode score is 0 points for the total depression score, 12 points for the total anxiety score, and 10 for the total stress score.

Table 4.13: Normality test for total DASS-21 subscales scores

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig. (<i>p</i> -value)
Total Depression Score	.160	162	<.001
Total Anxiety Score	.102	162	<.001
Total Stress Score	.106	162	<.001

Note: a: Lilliefors Significance Correction, *df*: degrees of freedom

Table 4.14: Descriptive statistic for total DASS-21 subscale scores

Variables	<i>Mdn</i>	<i>IQR</i>	Max	Min	Range	Mode
Total Depression Score	8	14	42	0	42	0
Total Anxiety Score	12	14	40	0	40	12
Total Stress Score	12	14	42	0	42	10

Notes: *Mdn*: Median, *IQR*: Interquartile Range, Max: Maximum Score, Min: Minimum Score

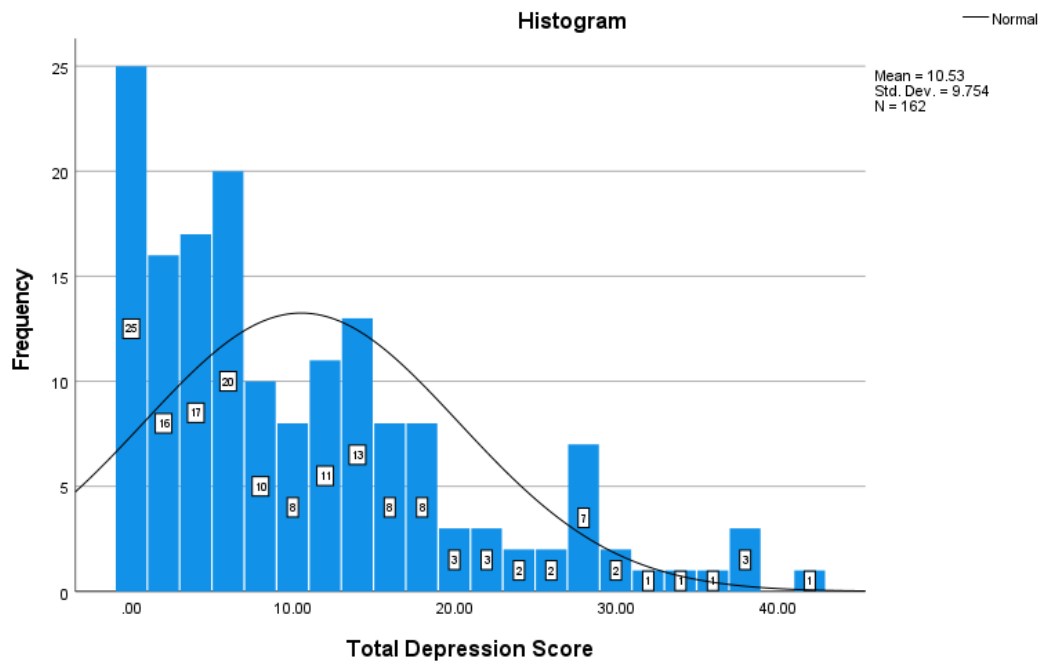


Figure 4.10: Histogram of total depression score

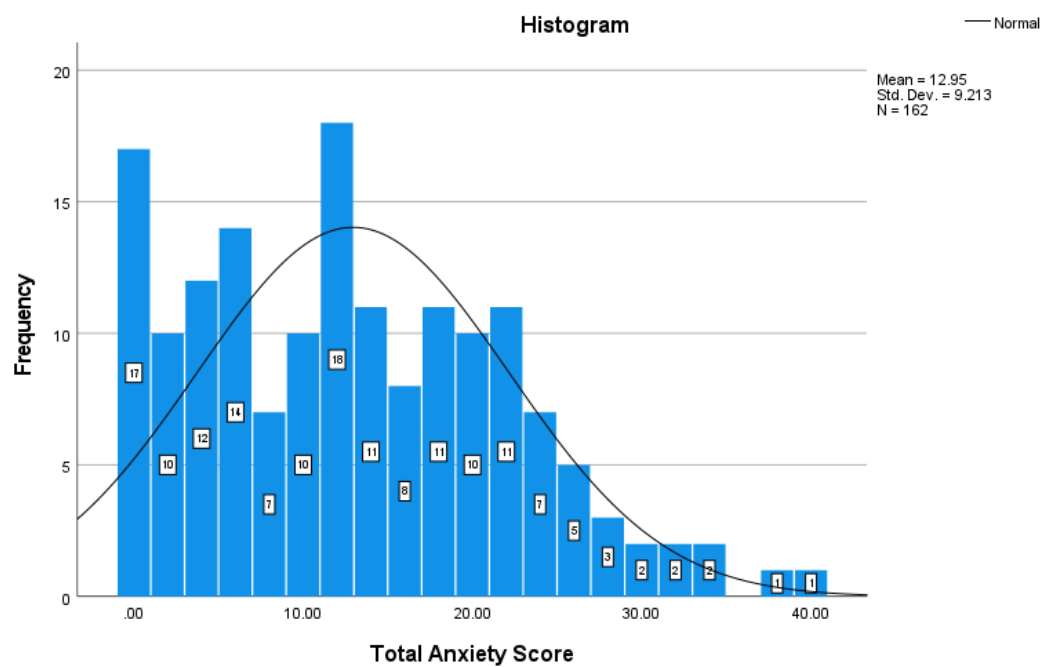


Figure 4.11: Histogram of total anxiety score

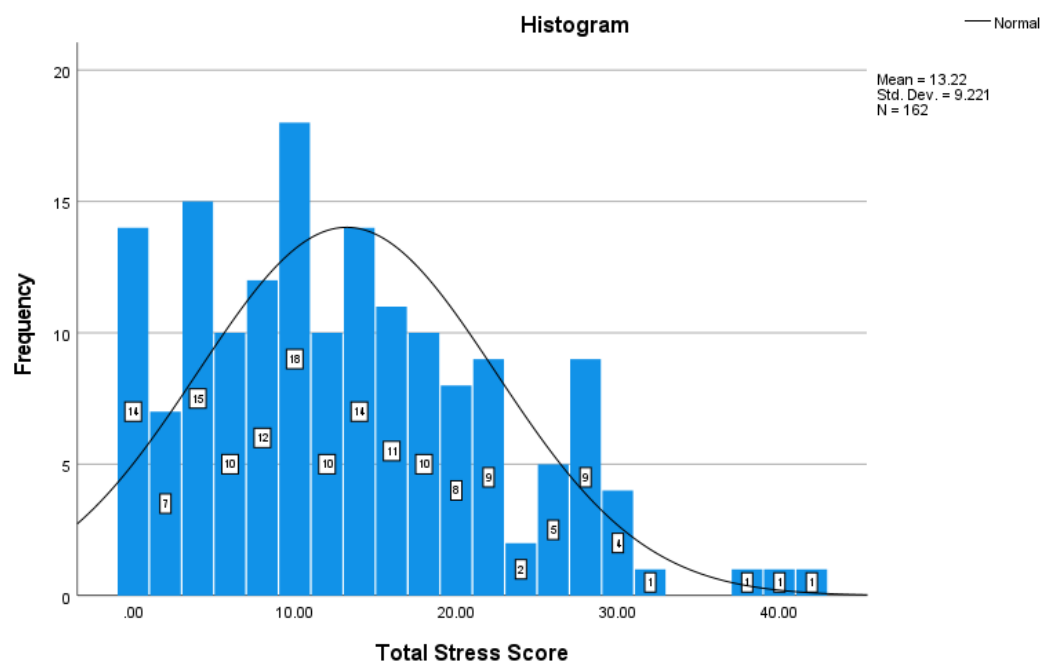


Figure 4.12: Histogram of total stress score

III. Severity of mental health status among participants

Recoding each subscale (depression, anxiety, and stress) total scores into severity level (categorization) was done using recoding into different variables in SPSS. The categorization into severity levels was performed according to the DASS-21 scoring system (Table 3.1), which assigns a different severity level to each subscale based on its total score.

For depression severity level, it was found that out of 162 participants, 88 (54.3%) of the participants have normal levels of depression, 19 (11.7%) have mild levels, 32 (19.8%) have moderate levels, 7 (4.3%) have severe levels and 16 (9.9%) of them are in extremely severe depression levels.

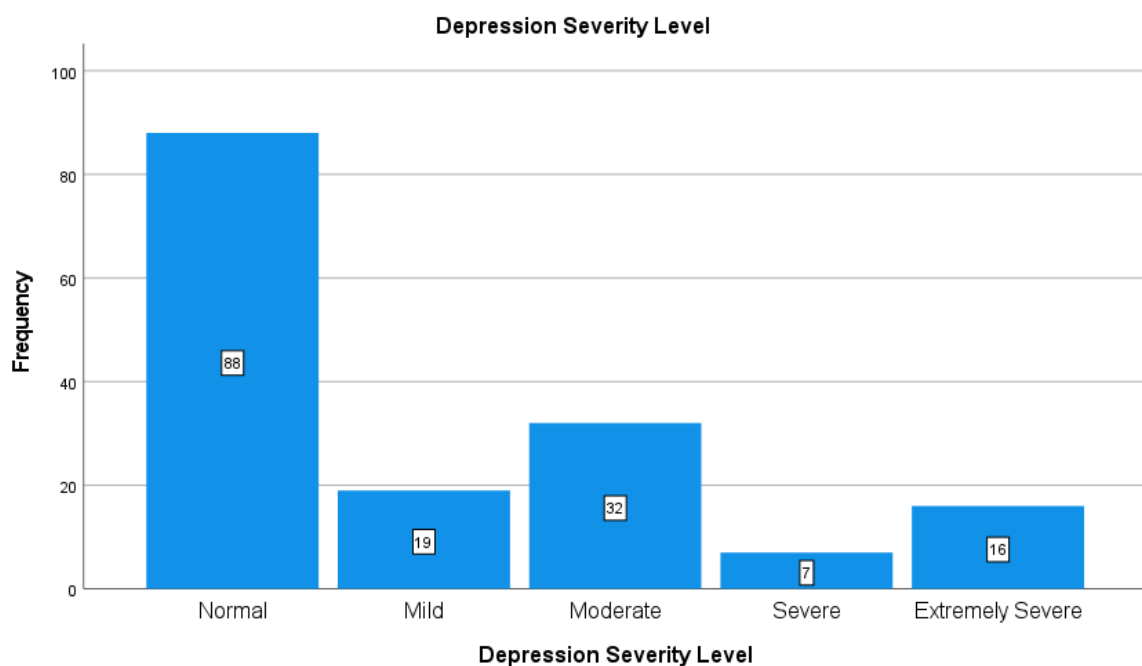


Figure 4.13: Bar Chart on The Depression Severity Level (Recode Total Depression Score)

For anxiety severity level, it was found that out of 162 participants, 53 (32.7%) of the participants have normal levels of anxiety, 7 (4.3%) have mild levels, 39 (24.1%) have moderate levels, 19 (11.7%) have severe levels and 44 (27.2%) of them are in extremely severe anxiety levels.

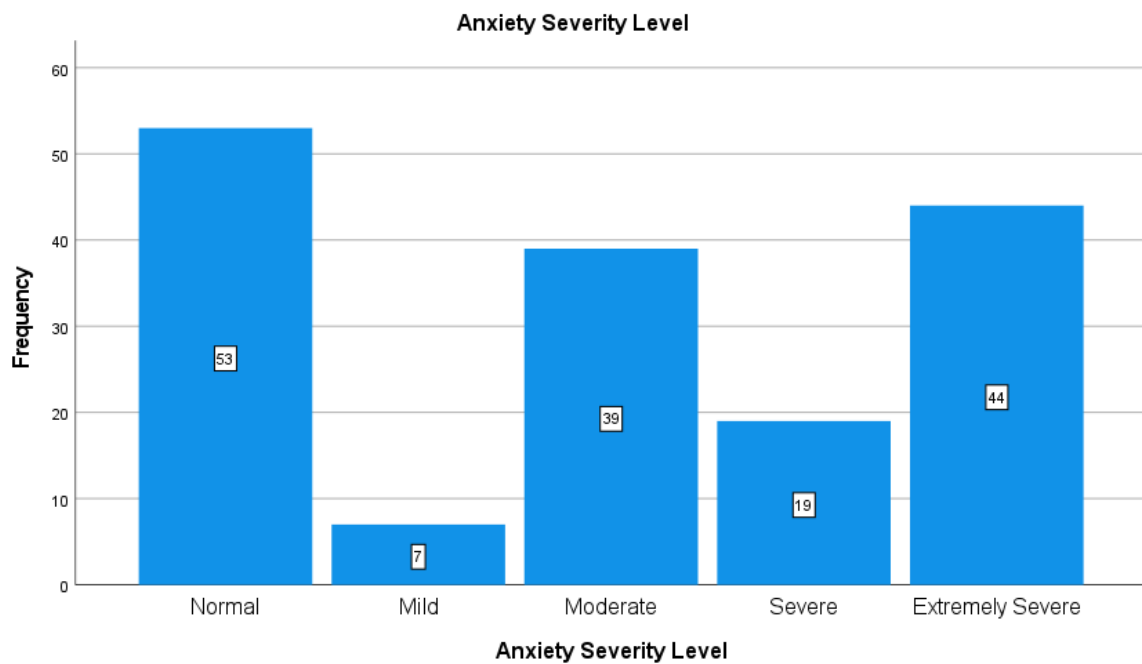


Figure 4.14: Bar Chart on The Anxiety Severity Level (Recode Total Anxiety Score)

For stress severity level, it was found that out of 162 participants, 100 (61.7%) of the participants have normal levels of anxiety, 21 (13.0%) have mild levels, 19 (11.7%) have moderate levels, 19 (11.7%) have severe levels and only 3 (1.9%) of them are in extremely severe stress levels.

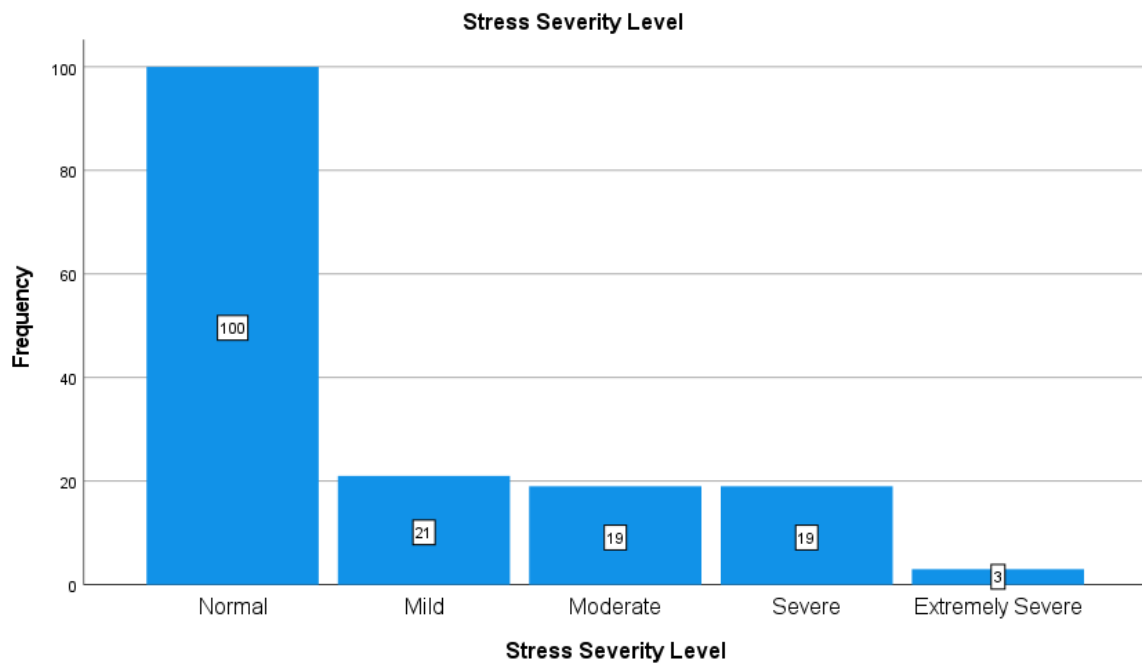


Figure 4.15: Bar Chart on The Stress Severity Level (Recode Total Stress Score)

IV. Prevalence of mental health status among participants

The recoded variables (depression, anxiety, and stress severity levels) were then recoded into the prevalence of depression, anxiety, and stress using visual binning in SPSS to set the cut-off scores to determine the presence of symptoms (depression, anxiety, and stress). The cut-off scores for each subscale are different, which are based on the categorization into severity levels for each subscale based on its total score. Participants who scored mild or higher (mild, moderate, severe, and extremely severe) for all 3 subscales represent the presence of symptoms while those who scored normal represent the absence of symptoms. Therefore, the cut-off scores are 10 and above for depression, 8 and above for anxiety, and 15 and above for stress.

Out of 162 participants, 88 (54.3%) show no symptoms of depression, and 74 (45.7%) of them have symptoms of depression.

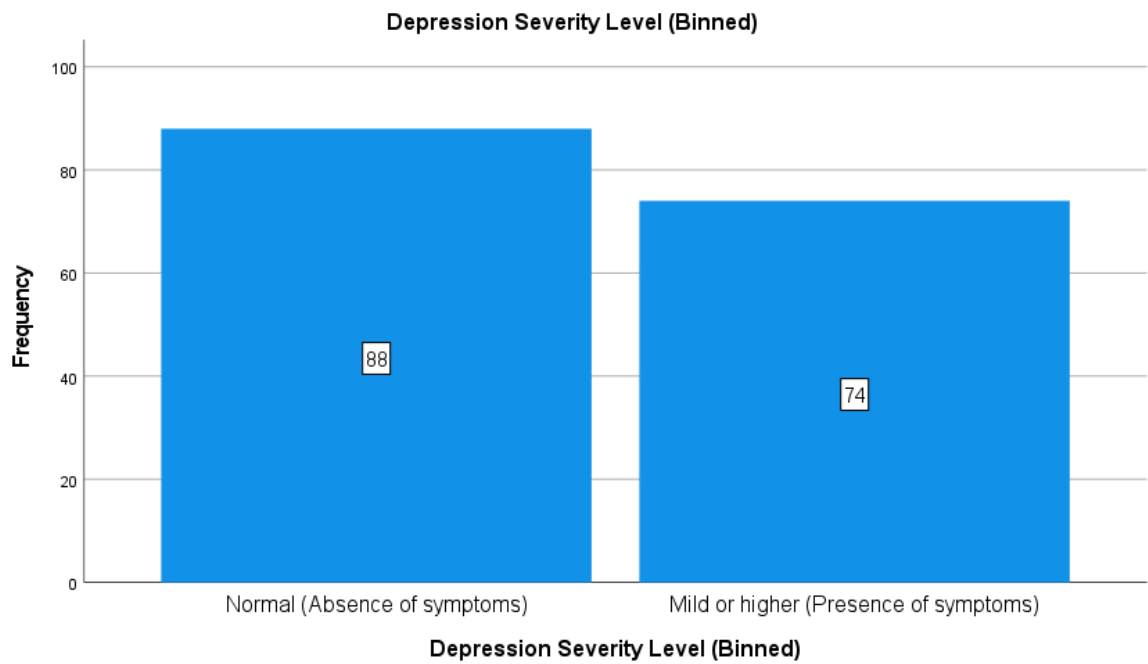


Figure 4.16: Bar Chart on the Prevalence of Depression (Binned Depression Severity Level)

Out of 162 participants, 53 (32.7%) have no symptoms of anxiety, and 109 (67.3%) of them show symptoms of anxiety.

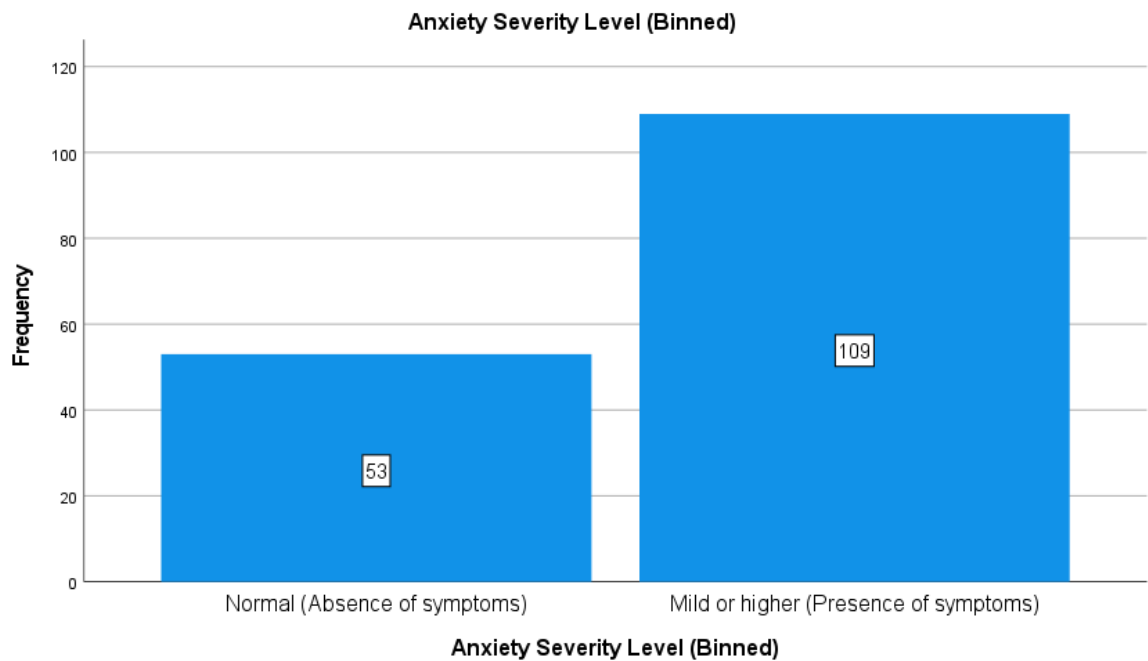


Figure 4.17: Bar Chart on the Prevalence of Anxiety (Binned Anxiety Severity Level)

Out of 162 participants, 100 (61.7%) show no symptoms of stress, and 62 (38.3%) of them have symptoms of stress.

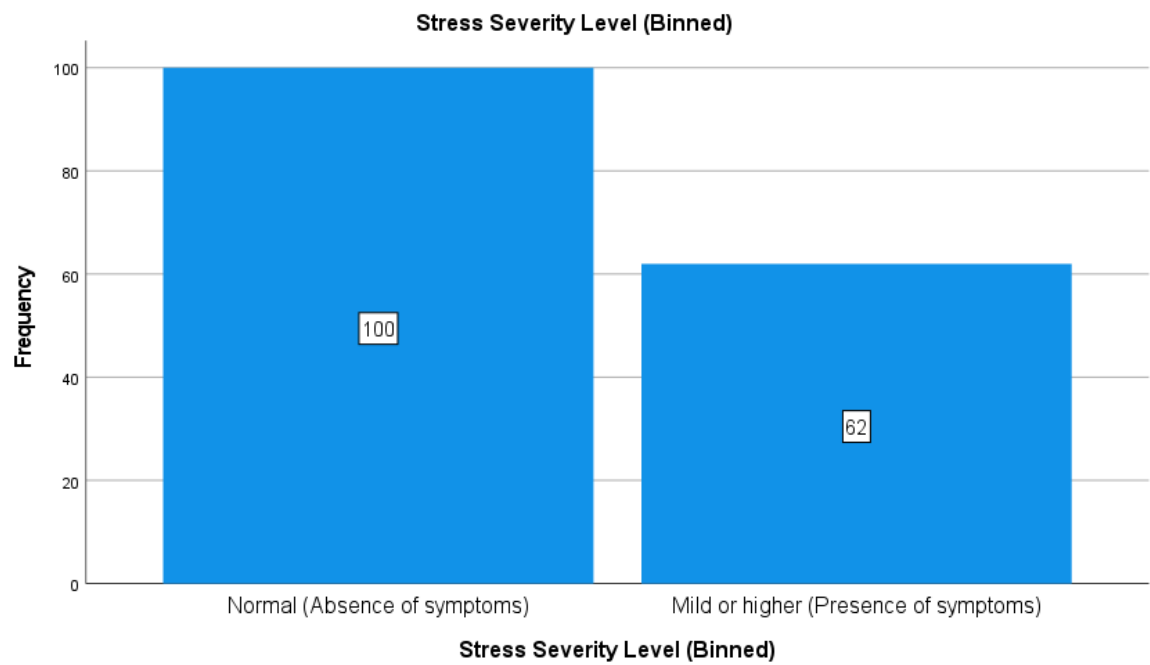


Figure 4.18: Bar Chart on the Prevalence of Stress (Binned Stress Severity Level)

V. Prevalence of Mental Health Status (Depression, Anxiety, and Stress) by Demographic Groups

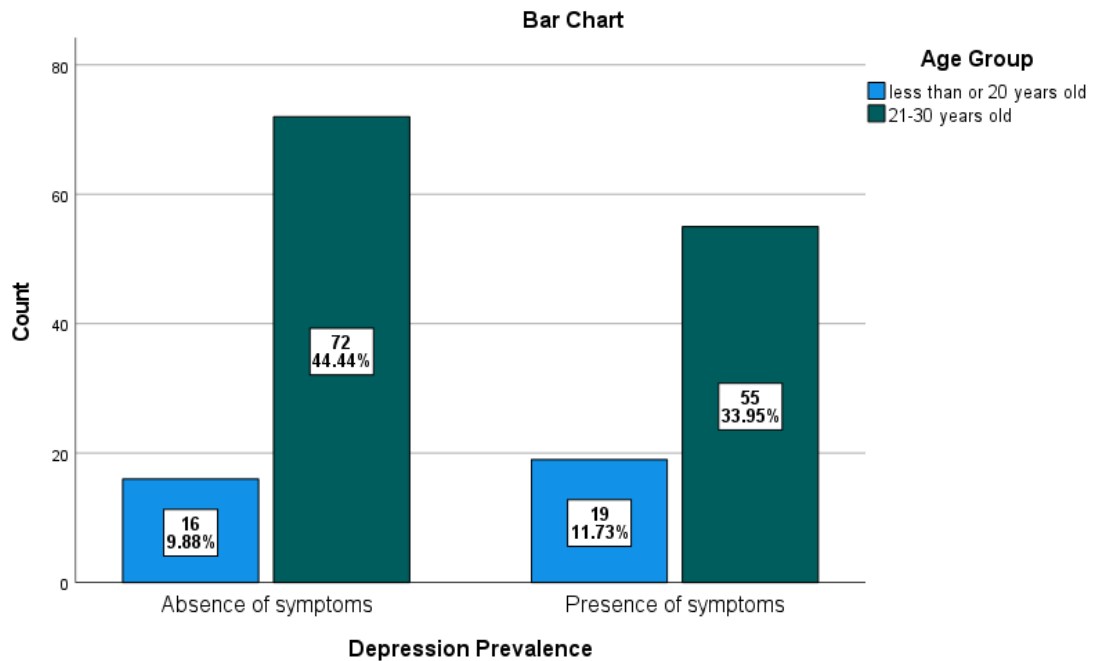


Figure 4.19: Bar Chart on the Prevalence of Depression by Age Group

Figure 4.19 shows the prevalence of depression by age group. Out of 35 participants who were less than and 20 years old, 19 (11.73%) showed symptoms of depression and 16 (9.88%) did not. For those who were 21-30 years old, 55 (33.95%) out of 127 participants aged 21-30 years old showed symptoms of depression, and 72 (44.44%) showed absence of depression.

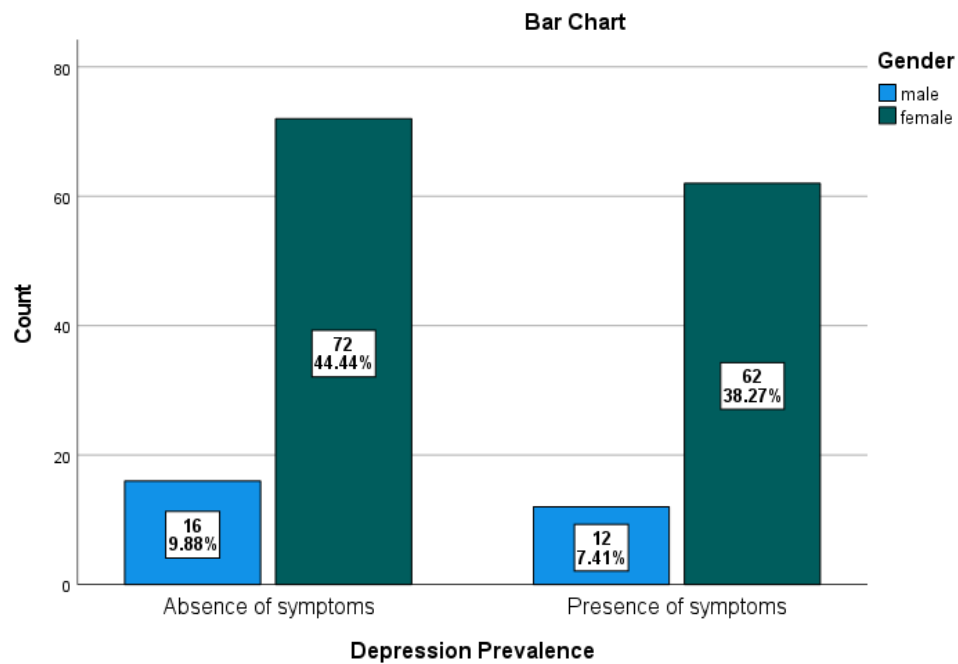


Figure 4.20: Bar Chart on the Prevalence of Depression by Gender

Figure 4.20 shows the prevalence of depression by gender. Out of 28 males, 12 (7.41%) presented with the presence of depression, while 16 (9.88%) presented absence of depression. For females, out of 134 female participants, 62 (38.27%) showed depression, and 72 (44.44%) showed no depressive symptoms.

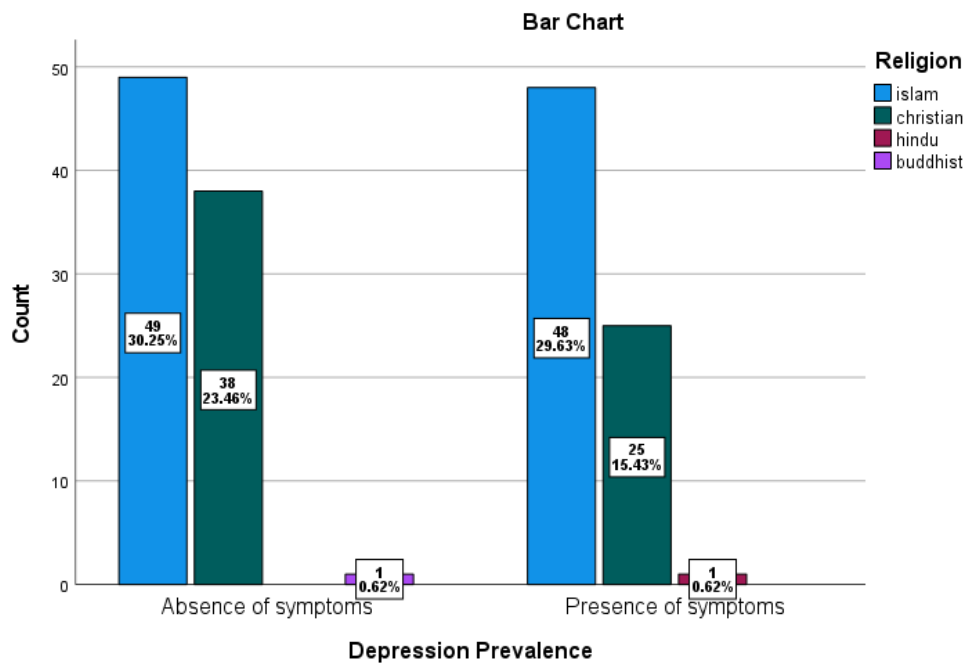


Figure 4.21: Bar Chart on the Prevalence of Depression by Religion

Figure 4.21 shows the prevalence of depression by religion. The distribution of participants who are Islam is almost even for both categories, which is 48 (29.63%) out of 97 Islam participants present with depression and 49 (30.25%) without. Meanwhile, out of 63 Christian participants, 25 (15.43%) showed depressive symptoms and 38 (23.46%) showed no depressive symptoms. The only Hindu participant showed depression (0.62%), meanwhile the only Buddhist participant showed no depression (0.62%).

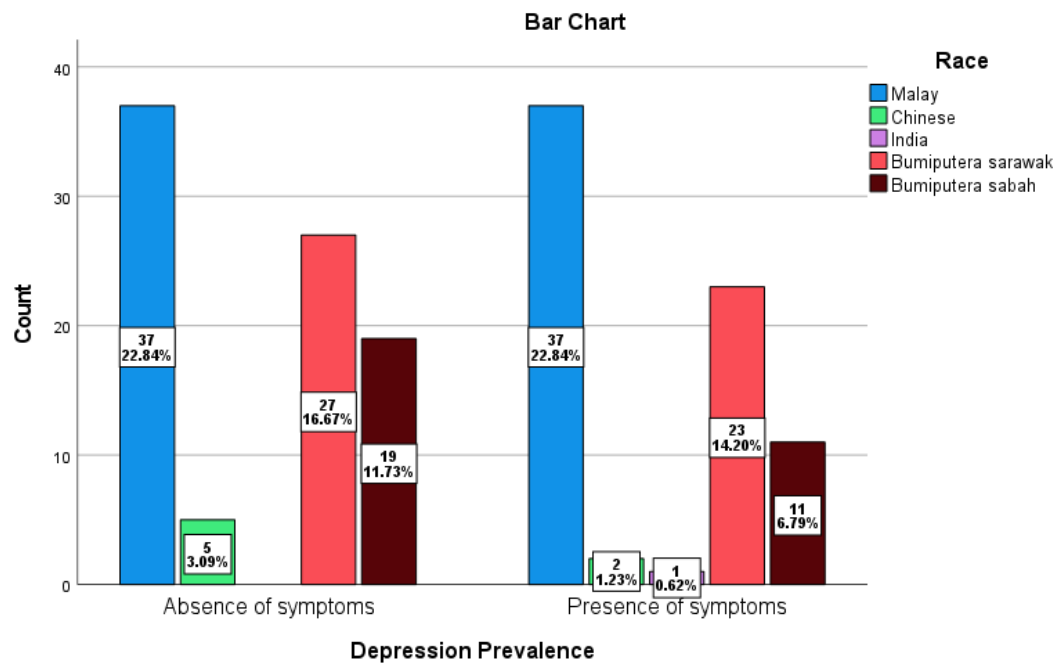


Figure 4.22: Bar Chart on the Prevalence of Depression by Race

Figure 4.22 shows the prevalence of depression by race. 74 Malay participants showed even distribution for the two categories, with 37 (22.84%) participants for each presence of symptoms and absence of symptoms. Out of 7 Chinese participants, only 2 (1.23%) showed the presence of depression, and 5 (3.09%) showed the absence of depression. For the only Indian participant, this participant showed depressive symptoms (0.6%). Out of 50 Bumiputera Sarawak participants, 23 (14.20%) present with depression and 27 (16.67%) without. Bumiputera Sabah, however, 11 (6.79%) out of 30 of them demonstrated depressive symptoms, and 19 (11.73%) demonstrated no depressive symptoms.

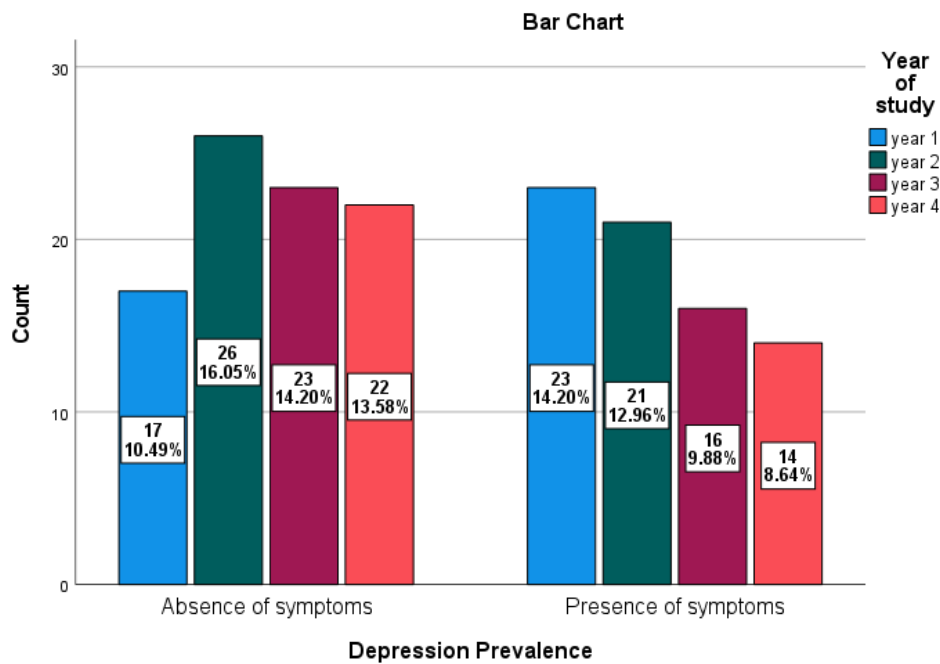


Figure 4.23: Bar Chart on the Prevalence of Depression by Year of Study

Figure 4.23 shows the prevalence of depression by year of study. Year 1 nursing students showed the highest depression prevalence, with 23 (14.20%) of 40 of them, and only 17 (10.49%) showed absence of depression. Year 2 is the second highest, with 21 (12.96%) of 47 of them showing depression, and 26 (16.05%) showing no depression. Following that, out of 39 year 3 participants, 16 (9.88%) have depression, and 23 (14.20%) have no depression. Lastly, year 4 participants who have the lowest prevalence for depression showed only 14 (8.64%) out of 36 of them present with depression, and 22 (13.58%) without depression.

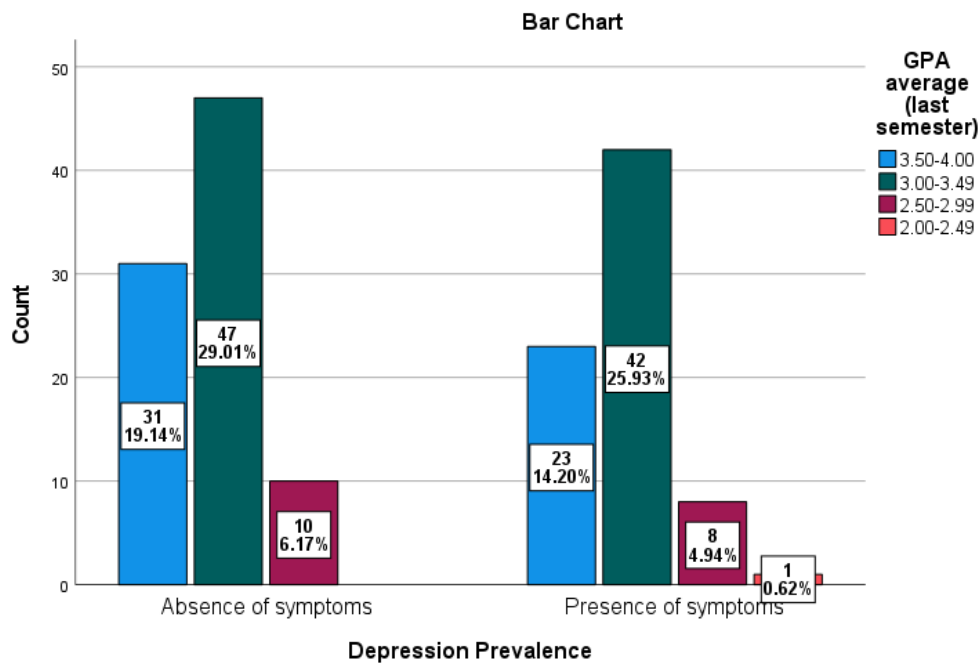


Figure 4.24: Bar Chart on the Prevalence of Depression by GPA average

Figure 4.24 shows the prevalence of depression by GPA average. Those who scored 3.00-3.49 showed the greatest prevalence of depression, with 42 (25.93%) out of 89 who scored in this range and 47 (29.01%) with no depression. Those who got a 3.50-4.00 GPA in the last semester are the second highest, with 23 (14.20%) out of 54 showing depressive symptoms and 31 (19.14%) without it. For 18 participants who scored a GPA of 2.50-2.99, 8 (4.94%) have depression and 10 (6.17%) do not. The only participant who scored 2.00-2.49 showed symptoms of depression (0.62%).

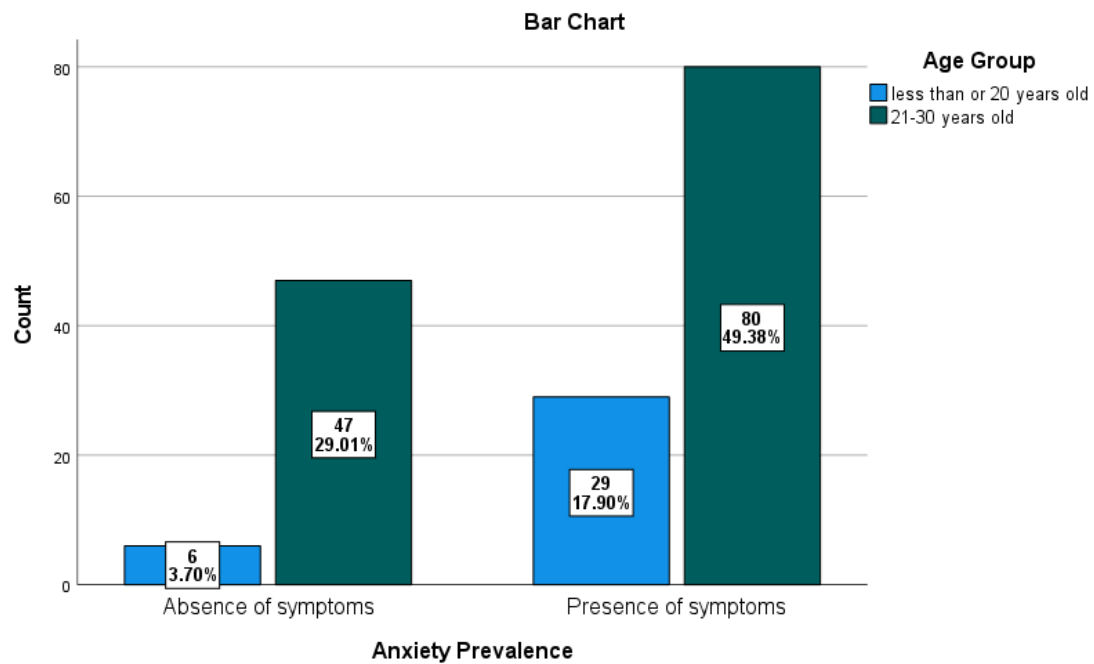


Figure 4.25: Bar Chart on the Prevalence of Anxiety by Age Group

Figure 4.25 shows the prevalence of anxiety by age group. Out of 35 participants who were less than and 20 years old, 29 (17.90%) of them showed anxiety symptoms and 6 (3.70%) of them showed no anxiety. For participants that are 21-30 years old, 80 (49.38%) out of 127 of them showed anxiety, and 47 (29.01%) presented without it.

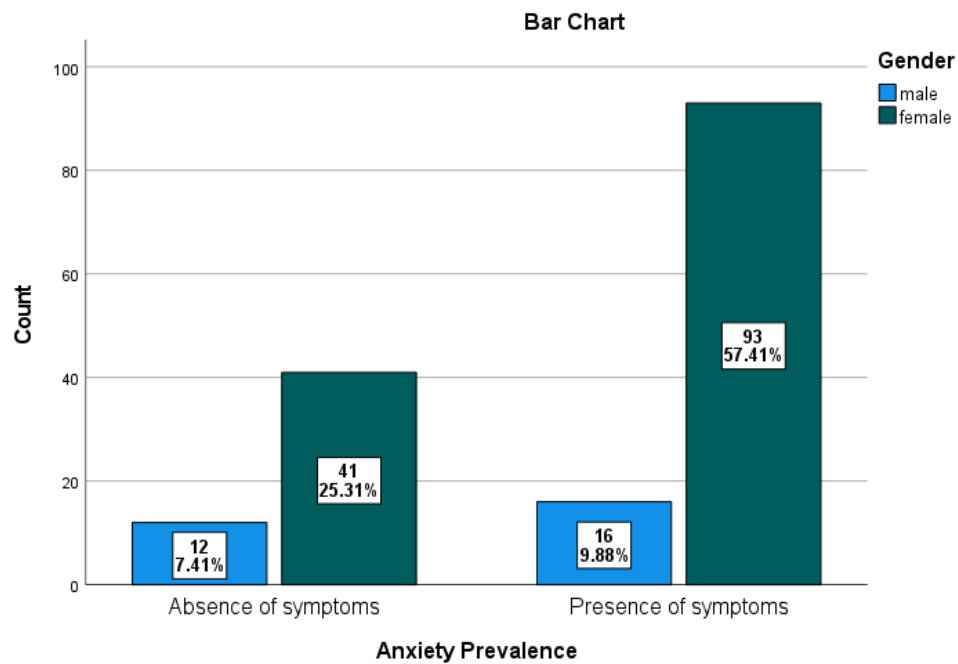


Figure 4.26: Bar Chart on the Prevalence of Anxiety by Gender

Figure 4.26 shows the prevalence of anxiety by gender. Females are more dominant, with 93 (57.41%) out of 143 of them showing symptoms of anxiety, and 41 (25.31%) without anxiety. Meanwhile, out of 28 male participants, 16 (9.88%) presented with anxiety and 12 (7.41%) without it.

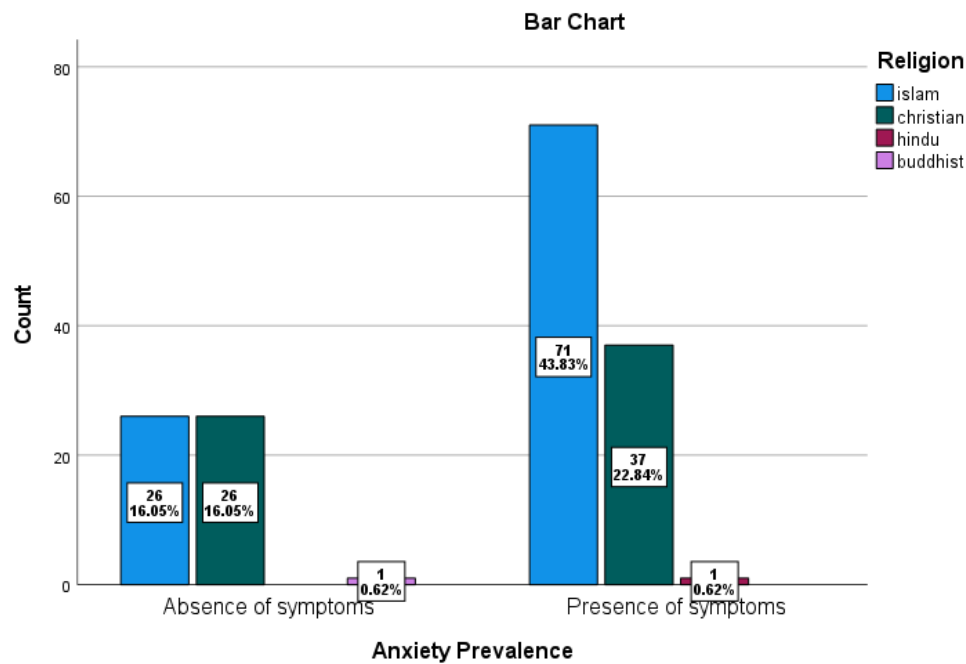


Figure 4.27: Bar Chart on the Prevalence of Anxiety by Religion

Figure 4.27 shows the prevalence of anxiety by religion. Out of 97 Islam participants, 71 (43.83%) of them have anxiety, and 26 (16.05%) did not. For those who are Christian, 37 (22.84%) out of 63 of them showed anxiety symptoms, and 26 (16.05%) did not. The only Hindu participant showed anxiety (0.62%), while the only Buddhist participant showed no anxiety (0.62%).

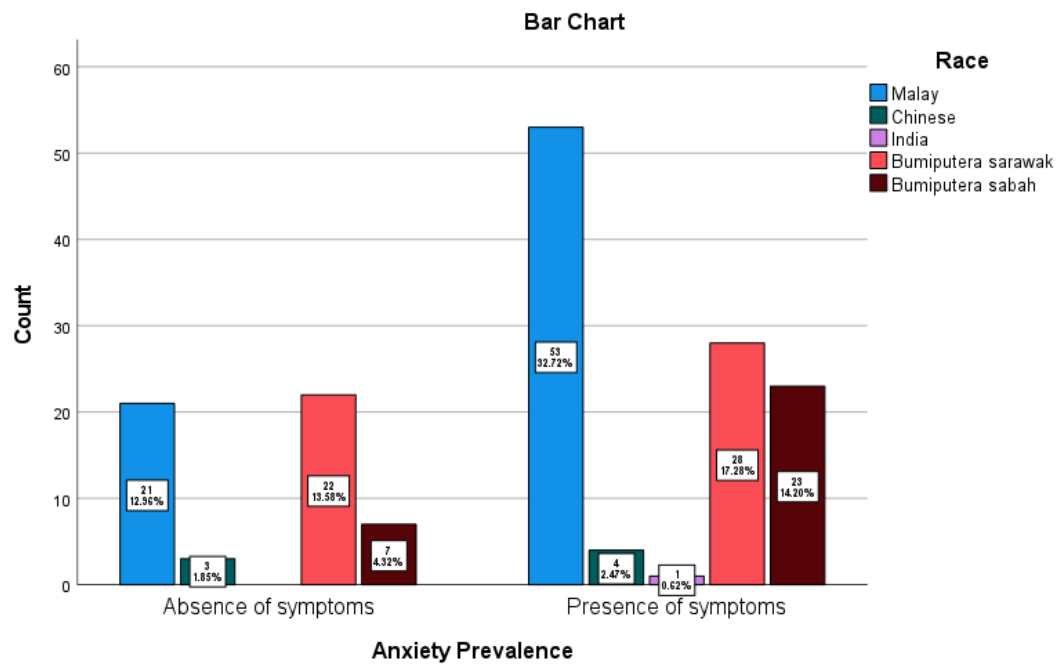


Figure 4.28: Bar Chart on the Prevalence of Anxiety by Race

Figure 4.28 shows the prevalence of anxiety by race. Malay participants were encountered in 53 (32.72%) of those having anxiety. Otherwise, the other 21 (12.96%) Malay participants out of 74 have no anxiety. For Chinese participants, 4 (2.47%) out of 7 showed anxiety, and 3 (1.85%) of them did not. The only Indian participant showed symptoms of anxiety (0.62%). Participants who are Bumiputera Sarawak have 28 (17.28%) out of 50 of them who have anxiety, and 22 (13.58%) did not. Lastly, out of 30 participants who are Bumiputera Sabah, 23 (14.20%) of them showed anxiety, and 7 (4.32%) showed no symptoms of it.

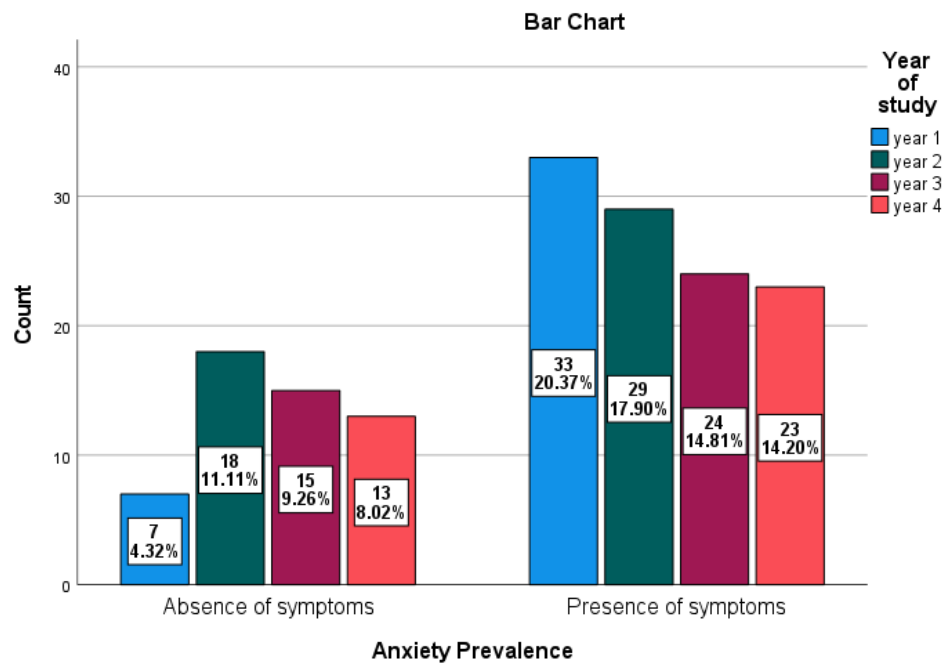


Figure 4.29: Bar Chart on the Prevalence of Anxiety by Year of Study

Figure 4.29 shows the prevalence of anxiety by year of study. Year 1 showed the greatest prevalence of anxiety, with 33 (20.37%) out of 40 of them, and only 7 (4.32%) were present without anxiety. Year 2 is the second highest with 29 (17.90%) out of 47 showed symptoms of anxiety and 18 (11.11%) without anxiety. 24 (14.81%) of 39 year 3 nursing students showed anxiety, and 15 (9.36%) of them did not. For year 4, 23 (14.20%) of 36 have anxiety, and 13 (8.02%) do not have the symptoms.

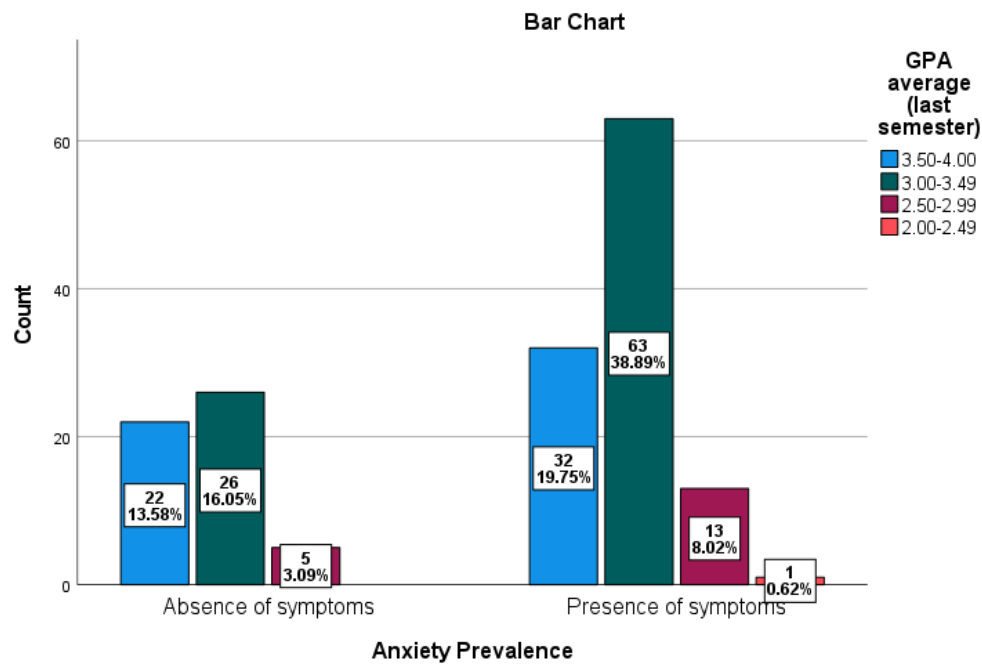


Figure 4.30: Bar Chart on the Prevalence of Anxiety by GPA average

Figure 4.30 shows the prevalence of anxiety by GPA average. Out of 54 who scored 3.50-4.00, 32 (19.75%) presence anxiety symptoms and 22 (13.58%) did not. Those who scored 3.00-3.49 have the highest prevalence of anxiety, with 63 (38.89%) out of 89 and 26 (16.05%) of them showing no anxiety. Meanwhile, participants who scored 2.50-2.99 have 13 (8.02%) out of 18 who scored in this range showing anxiety, and only 5 (3.09%) have no anxiety. For the only participant who scored 2.00-2.49, this participant showed symptoms of anxiety (0.62%).

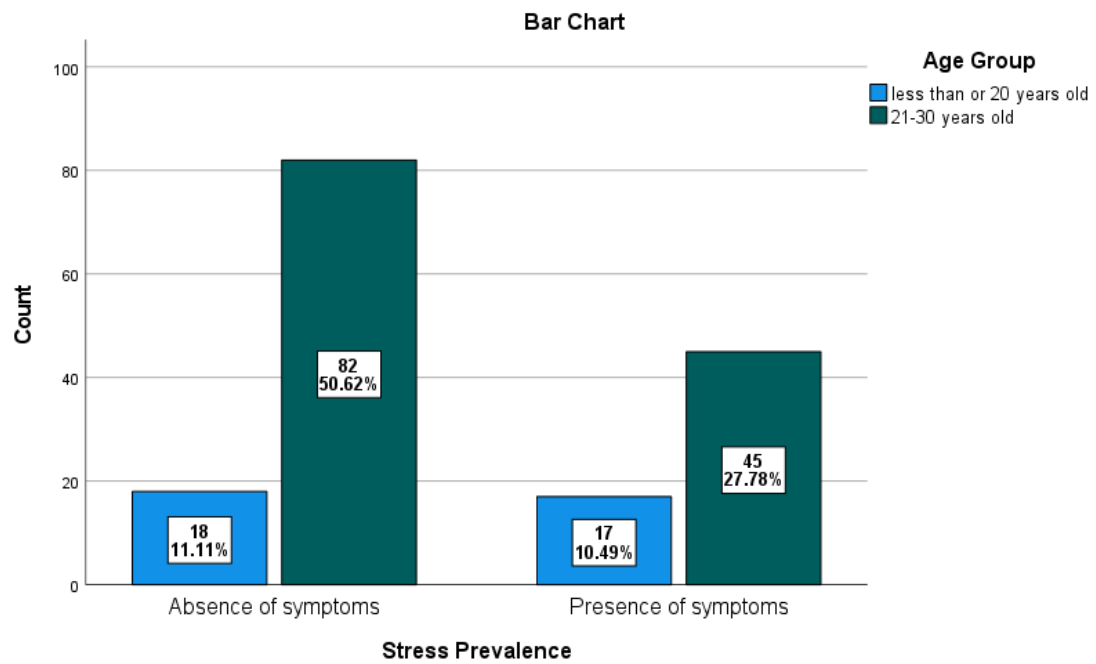


Figure 4.31: Bar Chart on the Prevalence of Stress by Age Group

Figure 4.31 shows the prevalence of stress by age group. Out of 35 participants who were less than and 20 years old, 17 (10.49%) had stress and 18 (11.11%) had no stress. Those who were 21-30 years old showed more prevalence, in which 45 (27.78%) of 127 of them showed symptoms of stress and 82 (50.62%) did not.

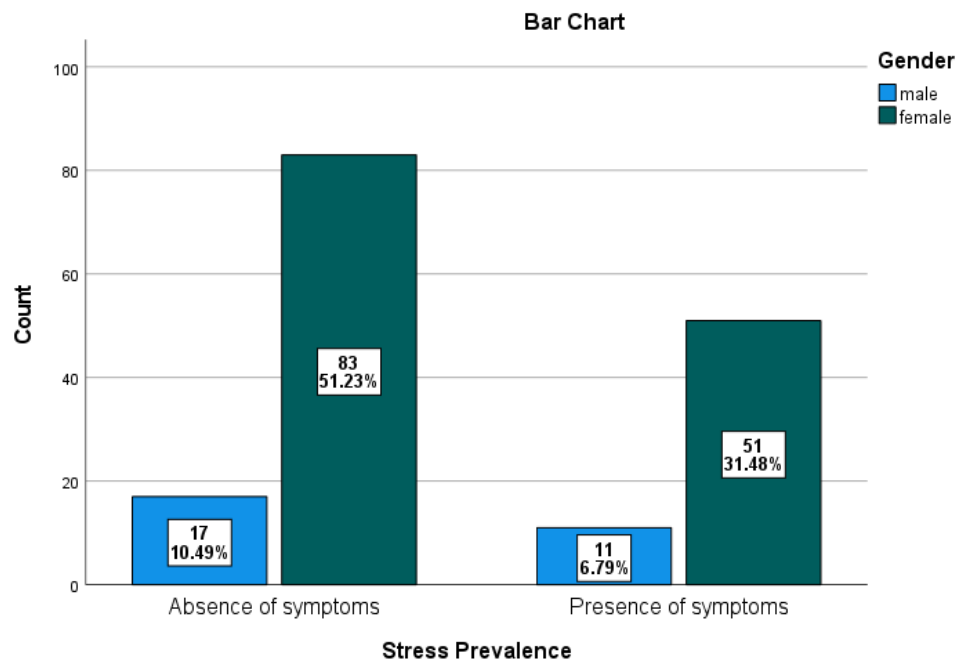


Figure 4.32: Bar Chart on the Prevalence of Stress by Gender

Figure 4.32 shows the prevalence of stress by gender. Out of 28 male participants, only 11 (6.79%) showed symptoms of stress, and the rest, which is 17 (10.49%), did not. Out of 134 female participants, 51 (31.48%) presented with stress, and the other 83 (51.23%) presented without stress.

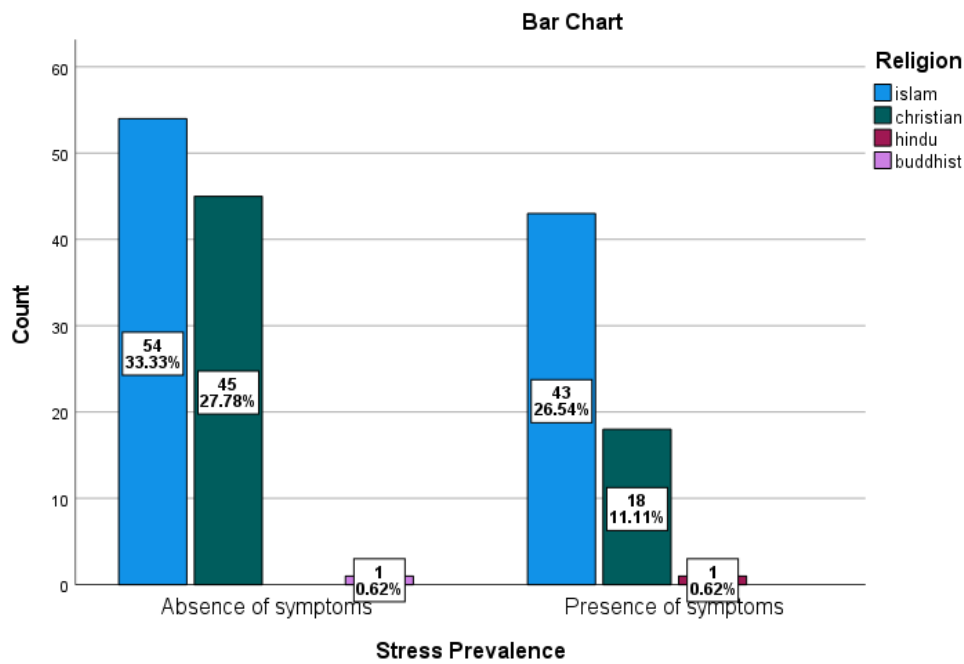


Figure 4.33: Bar Chart on the Prevalence of Stress by Religion

Figure 4.33 shows the prevalence of stress by religion. Out of 97 Islam participants, 43 (26.54%) showed symptoms of stress and 54 (33.33%) showed absence of the symptoms. Out of 63 Christian participants, 18 (11.11%) presented with stress and 45 (27.78%) did not. For the only Hindu participant, this participant showed symptoms of stress (0.62%), whereas the only Buddhist participant did not (0.62%).

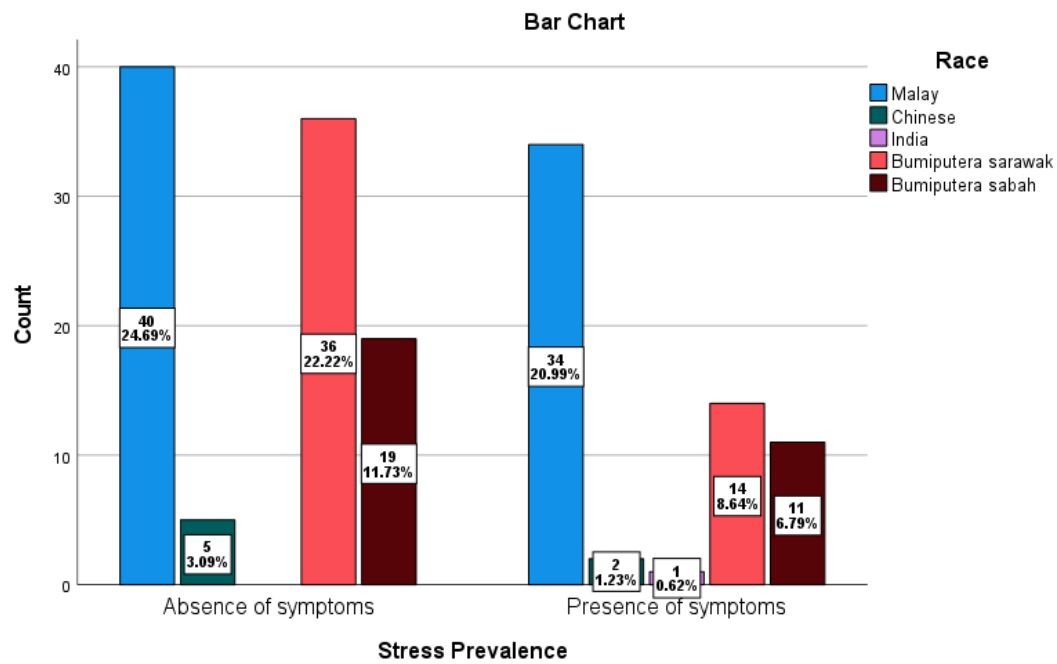


Figure 4.34: Bar Chart on the Prevalence of Stress by Race

Figure 4.34 shows the prevalence of stress by race. Out of 74 Malay participants, 34 (20.99%) presented the symptoms, and 40 (24.69%) presented with the absence of symptoms. For Chinese participants, out of 7 of them, only 2 (1.23%) showed stress, and 5 (3.09%) without it. For the one Indian participant, this participant showed the presence of stress symptoms (0.62%). Out of 50 Bumiputera Sarawak participants, 14 (8.64%) reported the presence of stress and 36 (22.22%) reported its absence. Out of 30 Bumiputera Sabah, 11 (6.79%) have stress and 19 (11.73%) do not.

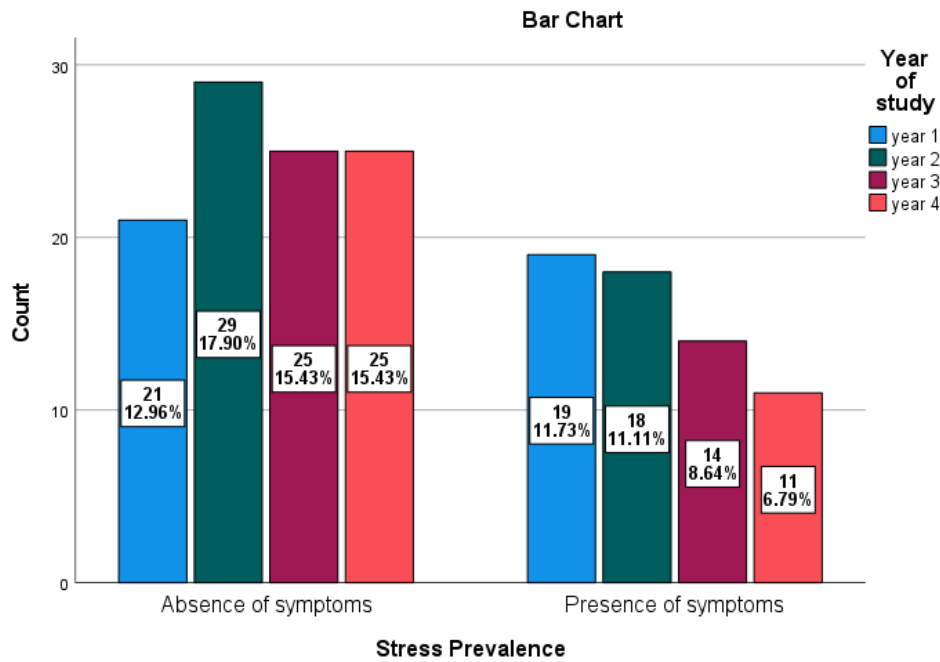


Figure 4.35: Bar Chart on the Prevalence of Stress by Year of Study

Figure 4.35 shows the prevalence of stress by year of study. Year 1 had the highest prevalence of stress than other years of study, with 19 (11.73%) out of 40 year 1 participants, and 21 (12.96%) of them did not have stress. For year 2 participants, out of 47, 18 (11.11%) presence stress symptoms and 29 (17.90%) did not. Out of 39 year 3 participants, 14 (8.64%) reported stress, and 25 (15.43%) reported no symptoms of stress. Lastly, year 4 participants, out of 36 of them, only 11 (6.79%) had stress, and 25 (15.43%) did not.

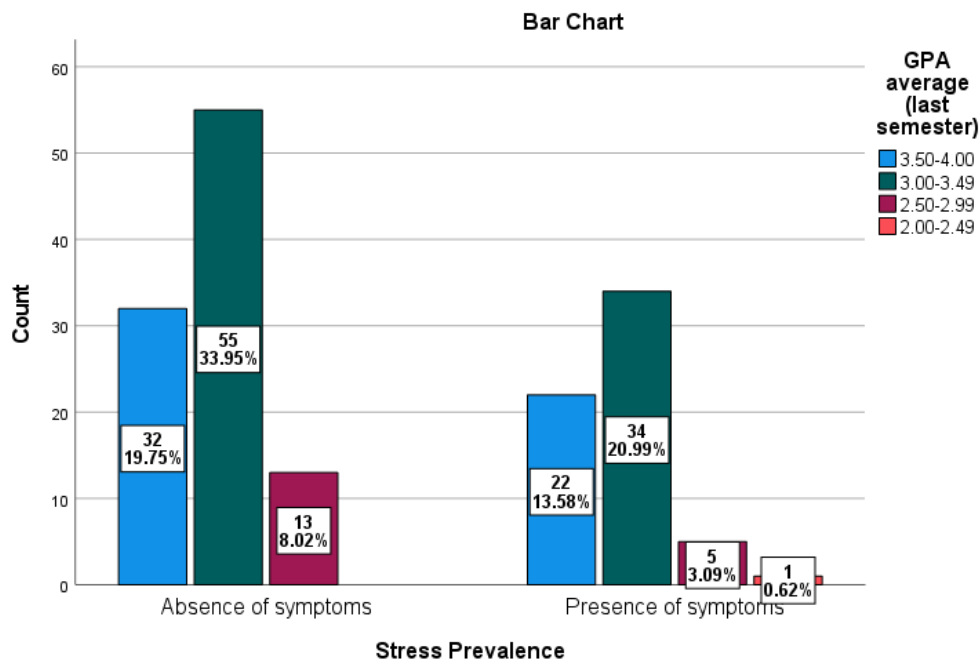


Figure 4.36: Bar Chart on the Prevalence of Stress by GPA average

Figure 4.36 shows the prevalence of stress by GPA average. Out of 54 participants who scored 3.50-4.00, 22 (13.58%) reported having stress, and 32 (19.75%) of them did not. The prevalence is higher among those who scored 3.00-3.49, with 34 (20.99%) out of 89 of those who scored in this range showing symptoms of stress, and 55 (33.95%) did not show the symptoms of stress. Out of 18 participants who scored 2.50-2.99, 5 (3.09%) had stress and 13 (8.02%) did not. The only person who scored 2.00-2.49 presented the symptoms of stress (0.62%).

4.4 The Relationship Between Obsessive-Compulsive Behaviours and Mental Health Status Among Undergraduate UNIMAS Nursing Students.

The relationship between obsessive-compulsive behaviours (total OCI-R score) and mental health status (DASS-21 total score) was investigated using the Spearman correlation coefficient. Preliminary analyses were performed, and OCI-R total score showed a significant normal distribution, $D(162) = .067, p = .076$ whereas there was a violation of the assumptions of normality for DASS-21 total score, $D(162) = .103, p = <.001$. No outliers and extreme values were detected from the box plot for the OCI-R total score but there are outliers detected from the box plot for the DASS-21 total score, and they were addressed using the Winsorization technique so there are no outliers. The relationship between obsessive-compulsive behaviours and mental health status was investigated using the Spearman correlation coefficient. There was a strong positive relationship between the two variables, $r(162) = .626, p = <.001$, with high levels of obsessive-compulsive behaviours ($Mdn = 30.0$) associated with high levels of mental health status ($Mdn = 16.5$).

Table 4.15: Spearman correlation coefficient between OCI-R and DASS-21 total score

			TotalOCI_RScore	Total DASS-21 Score
Spearman's rho	TotalOCI_RScore	Correlation Coefficient	1.000	.626**
		Sig. (2-tailed)	.	<.001
		N	162	162
	Total DASS-21 Score	Correlation Coefficient	.626**	1.000
		Sig. (2-tailed)	<.001	.
		N	162	162

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

CHAPTER 5

Discussion

5.0 Introduction

This chapter presents a deeper comprehension of the results and the correlation of the results with the conceptual framework chosen. It explores and explains the results of this study on investigating obsessive-compulsive behaviours and their relationship with mental health status among undergraduate UNIMAS nursing students. This chapter outlines the discussion on the results, compares them with previous research, and considers their implications for nursing education and practice. The discussion is presented in different sections based on this study's objectives, which are the prevalence of obsessive-compulsive behaviours among undergraduate UNIMAS nursing students, the mental health status of undergraduate UNIMAS nursing students, and the relationship between obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students. At the end of this chapter, it highlights the limitations of this study and provides recommendations to address the implications and limitations in future studies.

5.1 Discussion of the results of the study

5.1.1 The prevalence of obsessive-compulsive behaviours among undergraduate UNIMAS nursing students.

The results of the OCI-R revealed that 67.9% of nursing students at UNIMAS showed clinically significant obsessive-compulsive behaviours (OCBs), as measured by the Obsessive-Compulsive Inventory-Revised (OCI-R). This prevalence is significantly higher than international community estimates for OCD symptoms (1%–3%) (APA, 2013) and higher than similar studies on university populations in which 43% (707) out of 1644 showed obsessive-compulsive behaviours using OCI-R in Taher et al. (2021), 58.5% out of 584 reported to have obsessive-compulsive symptoms using Y-BOCS in Shoqeirat (2021) and 40% out of 275 had moderate to severe OC traits using ASOC in Elsayed & Ghazi (2021) study. Similarly, this study result supports the high prevalence of OCBs in Sultan et al. (2020), who found 20% out of 404 participants exhibited obsessive-compulsive symptoms using OCI-R, and 47% prevalence in Sarhan and Saleh (2022), who used Y-BOCS. The prevalence of obsessive-compulsive behaviours might be lower in these similar studies due to the larger sample size than this study and differences in measurement scales. The high prevalence found in this study may reflect the compounded stress experienced by nursing students due to clinical responsibilities, academic rigor, emotional strain linked to patient care environments, and cultural norms in Malaysia that discourage emotional expression, possibly manifesting as somatic or compulsive symptoms.

Interestingly, among the six OCI-R subscales, ordering (Median = 6) and hoarding (Median = 6) recorded the highest scores, followed by checking (Median = 5). The dominance in these three subscales reflects a pattern of control-related compulsions, which may suggest that students engage in these behaviours as coping strategies to manage

uncertainty and anxiety in demanding academic and clinical settings. It is often adaptive in moderation, but maladaptive when excessive. Involvement in these behaviours may also act as a compensatory mechanism in high-stakes educational settings where perfectionism is culturally reinforced. This finding is consistent with past literature by Elsayed & Ghazi (2021) and Taher et al. (2021) that showed the elevation of OCB prevalence among nursing and medical students is due to their stressful training environments and perfectionist tendencies.

Furthermore, this study's result aligns with Shoqeirat (2021), who found a high prevalence of obsessive-compulsive symptoms (58.53% among 584 participants) and that females showed greater frequency. Besides that, Al-Awad et al. (2024) and Coban et al. (2024) also support that obsessive-compulsive symptoms are more prevalent in females than in males. However, this study's prevalence of OCBs among genders could be biased since among 162 participants, only 28 (17.3%) were male and 134 (78.4%) were female. Therefore, females could be dominant in all results. Besides gender, those who are aged 21-30 years old present with a greater prevalence of OCBs, with 72.7% compared to 27.3% of those who are less than or 20 years old out of 110 participants who showed clinically significant OCBs based on the age group. However, the frequency of participants who are in the 21-30 years old age group is greater (78.4%) compared to those who are less than or 20 years old (21.6%), which could bias this result.

Moreover, participants who are Islam (59.9%) showed the greatest prevalence, with 65.5% compared to Christians (33.6%) and Hindus (0.9%) out of 110 participants who scored OCBs. Yet, the frequency of Islam participants is the highest, which prejudices this result. The same goes for prevalence among races, Malays showed the highest prevalence,

with 47.3% rather than other races, since this race is dominant among those who participated. Other than that, year 1 nursing students scored the highest prevalence of OCBs, with 31.8% (35) out of 24.7% (40) of them, than year 2 (27.3% out of 29.0%), year 3 (23.6% out of 24.1%), and year 4 (17.3% out of 22.2%). These support Elsayed and Ghazi (2021), who found a significant amount of OCBs among first-year undergraduate nursing students, which is among 275, 60.0% had mild OC traits, 35.3% had moderate OC traits, and 4.7% had severe OC traits, with a total mean score of 25.81 ± 10.073 . For prevalences among GPA average group, those who scored 3.00-3.49 scored the highest incidence of OCBs (60.0%) than those who scored 3.50-4.00 (29.1%), 2.50-2.99 (10.0%), and 2.00-2.49 (0.9%). Despite that, participants who got 3.00-3.49 have the highest number of participants (54.9% out of 162 participants). Thus, reducing the validity of this result.

Elsayed & Ghazi (2021) and Taher et al. (2021) also mentioned that heightened obsessive-compulsive symptoms among medical students, especially during pandemic conditions, intensified health anxiety and contamination fears. Such behaviours may persist even in post-pandemic settings (nowadays) due to lingering psychological impacts and maladaptive coping mechanisms, as evidenced by the high incidence of OCBs in this study. While OCBs are not inherently pathological, their persistent and intrusive nature in this population suggests that many students may be at risk of developing full-blown obsessive-compulsive disorder (OCD) if interventions are not implemented early.

5.1.2 The mental health status of undergraduate UNIMAS nursing students.

Analysis of mental health status using the DASS-21 scale revealed high symptom levels across all three subscales, in which 45.7% of nursing students exhibited symptoms of depression, 67.3% showed anxiety symptoms, and 38.3% had stress symptoms out of 162 participants. These statistics showed those who have mild to extremely severe levels of those three mental health conditions. This study's result concluded that anxiety is the most prevalent (67.3%) among nursing students in UNIMAS, which supports Solomon et al. (2024) that anxiety was the most prevalent issue, with 78.5% of 172 nursing students. These results are consistent with regional and global data that identify nursing students as a high-risk group for mental distress. These substantial portions of students that exhibited the three symptoms align with studies such as those by Hussein & Mushaluk (2023) reported that over 50% of nursing students had mental health issues during the pandemic, and Morton (2022), who showed 63% of nursing students deteriorated their mental health since 2022. Even so, a recent study by Badillo-Sánchez et al. (2025) found stress as the most prominent symptom among nursing students at 52.46%, while anxiety and depression are 33.6% and 37.92%, respectively. Yet, this still shows a great prevalence for all three symptoms.

Furthermore, this study revealed that 38.9% out of 162 nursing students had severe to extremely severe anxiety, which aligns with a study by Chapagain et al. (2023) that revealed a high anxiety level, in which 37% out of 104 nursing students had severe anxiety using the same measurement tool (DASS-21). Subsequently, Uddin and Fariha (2024) also found a significant prevalence of anxiety (66.0%), with 38.0% of 120 undergraduate nursing students reporting abnormal levels. The severity levels are lower for depression, in which only 4.3% have severe levels, and 9.9% of 162 have extremely severe depression levels, which aligns with a previous study by Uddin and Fariha (2024) that reported 18.4% among

120 participants scored abnormal range for depression and Solomon et al. (2024) that stated depression was less prominent than anxiety and stress.

Similarly, only 11.7% have severe stress, and 1.9% have extremely severe stress levels. This supports the findings from Chapagain et al. (2023), who only found 17% of the participants suffering from severe depression and stress. However, Solomon et al. (2024) found a greater prevalence of stress (75%) compared to this study's result, which only showed 38.3%. But that study was conducted outside of the Malaysian population, which limits direct comparability. This indicates a concerning level of psychological distress among the nursing students. These psychological strains may be due to fear of academic failure, clinical errors, and emotional exhaustion. This study also adds weight to earlier Malaysian research by Radeef et al. (2019), indicating that nearly one-third of local nursing students (31.6% of 174 undergraduate nursing students) experience significant psychological distress, often without access to proper support systems.

Despite this, the uptake of institutional mental health services remains critically low, possibly due to stigma, time constraints, or limited awareness. These findings underscore a mental health crisis among nursing students, with anxiety being most pronounced with reasons that can include clinical exposure, which can cause anticipatory anxiety and fear of mistakes, academic workload, especially in assessment-heavy programs, and gendered stress responses, as 83% of the sample was female who are statistically more vulnerable to internalizing disorders. This is true as indicated by the prevalence of depression, anxiety, and stress that are more prominent in females than males, in which 38.27% females have depression instead of 7.41% in males, 57.41% females show anxiety than 9.88% in males and 31.48% females experience stress than 6.79% in males. This supports the study by

Hussein and Mushaluk (2023), who stated that young female nursing students are more prone to mental health effects, with 50% of nursing students who had mental health issues being primarily female students.

Besides gender, the prevalence of depression, anxiety, and stress among age groups showed that those who are 21-30 years old experience more mental health issues, as evidenced by the high prevalence of mental health symptoms in this age group compared to those who are less than or 20 years old. 33.95% of those aged 21-30 years old have depression, 49.38% show anxiety, and 27.78% are experiencing stress, than those less than or 20 years old, who 11.73% have depression, 17.90% anxiety, and 10.49% stress. However, the frequency of those aged 21-30 years is much greater (127) than those who are less than or 20 years old (35), which limits the comparison. As the result shows, for both age groups, anxiety is the most prevalent rather than depression or stress.

The same goes for the prevalence among religions, which showed Islam participants yielded higher prevalence for all three symptoms, with 29.63% scoring for depression, 43.83% anxiety, and 26.54% for stress out of 95 of them. Their prevalence is much higher than other religions because the majority who participated are Islam rather than other religions (63 Christian, 1 Hindu, and 1 Buddhist). Hence, the results between religions might be biased. For Christians, most reported anxiety (22.84%) rather than depression (15.43%) and stress (11.11%). A Hindu participant showed all three symptoms, whereas a Buddhist participant did not show all three of them. Therefore, anxiety is the most prevalent among Islam and Chinese participants.

Similarly, Malay participants also scored the highest rate on depression (22.84%), anxiety (32.72%), and stress (20.99%) than their counterparts, since there are 74 Malay

participants, 50 Bumiputera Sarawak, 30 Bumiputera Sabah, 7 Chinese, and only 1 Indian, which biased this result. Bumiputera Sarawak is the second highest, followed by Bumiputera Sabah in third. For Bumiputera Sarawak participants, most of them showed anxiety (17.28%) rather than depression (14.20%) and stress (8.64%). Same for Bumiputera Sabah who reported most of them have anxiety (14.20%) rather than depression (6.79%) and stress (6.79%). Chinese participants also scored most on anxiety (2.47%) compared to depression (1.23%) and stress (1.23%), whereas an Indian participant reported having all three symptoms. Hence, anxiety has the highest prevalence among Malay, Bumiputera Sarawak, Bumiputera Sabah, and Chinese compared to depression and stress.

However, for the year of study, year 1 nursing students have the highest prevalence of all three mental health symptoms, in which 14.20% showing depression, 20.37% have anxiety, and 11.73% present with stress out of 40 of them although year 2 nursing students who participated is much more than them (47 participants). Year 2 is the second highest, with anxiety being prominent at 17.90% rather than depression (12.96%) and stress (11.11%). Year 3 also had anxiety the most (14.81%). Year 4 has the lowest prevalence for all three mental health conditions, but anxiety is the most prominent among them, with 14.20% than 8.64% for depression, and 6.79% for stress. Thus, across all years of study, anxiety is the most prevalent.

Lastly, the prevalence of depression, anxiety, and stress across GPA groups showed that those who scored 3.00-3.49 have the highest prevalence for all three symptoms, with 25.93% for depression, 38.89% anxiety, and 20.99% stress out of 89 who scored in this range. The prevalence is much larger compared to other GPA groups due to the larger frequency in this GPA group than in other GPA groups (54 scored 3.50-4.00, 18 scored 2.50-

2.99, and only 1 scored 2.00-2.49), which could discriminate these results. Anxiety is still the most dominant in all GPA groups, with 19.75% for those who scored 3.50-4.00 and 8.02% for those with 2.50-2.99. The only participant with 2.00-2.49 also reported anxiety.

Such prevalence highlights the mental burden this group carries, which could impede academic performance, clinical training, and professional development. Consequently, this mirrors global concerns about emotional exhaustion, burnout, and reduced resilience among healthcare students, signalling an urgent need for curricular reforms and psychological support.

5.1.3 The relationship between obsessive-compulsive behaviours and mental health status among undergraduate UNIMAS nursing students.

The study demonstrated a strong, statistically significant positive correlation (Spearman's $\rho = 0.626$, $p < .001$) using Spearman's rank correlation between obsessive-compulsive behaviours (total OCI-R score) and mental health status (total DASS-21 score). A statistically significant positive correlations were also found between OCBs and symptoms of depression ($\rho = 0.593$, $p < .001$), anxiety ($\rho = 0.626$, $p < .001$), and stress ($\rho = 0.624$, $p < .001$) (mental health status). Higher OCI-R scores were significantly associated with higher DASS-21 scores, suggesting that those who reported more obsessive-compulsive tendencies also experienced more psychiatric comorbidities.

This relationship supports previous findings in the literature by Rowe et al. (2021) that confirmed strong comorbidity between OCBs and psychiatric comorbidities like depression, bipolar disorder, substance abuse disorder, and psychosis, with particularly strong links identified for depression. This literature also reinforced the view that such behaviours are not just quirks but potential precursors or symptoms of broader mental health

disorders. In other words, obsessive-compulsive tendencies do not exist in isolation but are closely interlinked with broader psychopathological processes. The more severe a student's OCBs, the more likely they are to experience depression, anxiety, and stress. In addition, this study is corroborated by Das and Malakar (2024) in a way that they demonstrate that psychiatric comorbidities occur at high rates among those with obsessive-compulsive symptoms, with major depressive disorder (63%) and mixed anxiety and depressive disorder (22%) appearing most often. In particular, the compulsions, while initially enacted to neutralize intrusive thoughts, become stressors themselves, creating a feedback loop of distress and maladaptive behaviour.

Furthermore, a study by Shafaghi et al. (2024) is consistent with this study's result on the relationship between the two variables, which revealed that OCD patients scored significantly higher on depression (20.50 points) and anxiety (17.8 points) scales than healthy controls (2.16 and 4.29 points, respectively). Subsequently, this study's relationship confirms the findings in Taher et al. (2021), who found that obsessive-compulsive symptoms accompanying mental health problems affect a significant amount of medical students (70.1% of 1644), with anxiety (25.9%) and stress (23.7%) emerging as top issues. This study's relationship result also aligns with El-Sayed et al. (2024), who found a link between high levels of anxiety and the incidence of obsessive-compulsive symptoms. Correspondingly, Aamir (2024) found a statistically significant relationship between those who screened positive for OCD and depression ($P < 0.001$). Moreover, this study's result supports Giasuddin & Hossain (2020), who stated that obsessive-compulsive behaviours are closely linked to mental health status, often co-occurring with anxiety and depression. Besides, they also stated that symptoms of OCD disrupt daily functioning and worsen emotional well-being, leading to increased anxiety and depressive symptoms.

These results suggest that screening for OCBs could serve as a proxy for identifying students at risk for broader mental health problems and offer an entry point for early interventions. Furthermore, it reinforces the cognitive-behavioural model of OCD, which posits that compulsive behaviours temporarily reduce distress from intrusive thoughts, but perpetuate maladaptive thinking patterns, increasing emotional burden over time. The strong correlations suggest that OCBs may serve as both a symptom and a coping mechanism. For example, compulsive checking may reduce uncertainty but elevate anxiety when disrupted. Hoarding, on the other hand, may reflect underlying fears of loss or failure, aligning with depressive symptomatology. These patterns also reflect maladaptive perfectionism, which is a trait linked to both OCBs and mental distress, especially in healthcare students.

5.2 Summary of results of the study

This study presents compelling evidence that obsessive-compulsive behaviours are both highly prevalent and are significantly associated with poor mental health outcomes among UNIMAS undergraduate nursing students. The strong positive correlation suggests that OCBs may be both a symptom and a contributing factor to mental health issues, meanwhile, the high levels of depression, anxiety, and stress observed warrant immediate preventive strategies and structured mental health programs, which are essential to support this vulnerable group of future healthcare professionals. Importantly, OCBs may serve as early indicators of psychological vulnerability, highlighting the need for proactive mental health screening and support.

5.3 Implications and recommendations of the study

The high correlation between OCBs and mental health symptoms underscores the intertwined nature of compulsive behaviours and emotional dysregulation. It is crucial to view OCBs not merely as behavioural issues but as potential markers of deeper psychological distress. These patterns mirror global findings but appear intensified due to academic, cultural, and pandemic-related stressors. The data reinforce the need for targeted mental health strategies, early screening mechanisms, and culturally sensitive interventions to support this vulnerable group. Without intervention, OCB and mental distress levels may escalate into clinical disorders, impairing academic and professional functioning, hence undermining the future workforce of Malaysia's healthcare system.

Moreover, the findings raise important questions about nursing curricula. High academic and clinical expectations may inadvertently contribute to psychological pressure, fostering perfectionistic tendencies that escalate into compulsive behaviours. This suggests a need to reevaluate curricular intensity, integrate resilience training and mindfulness practices, and embed mental health screening and intervention protocols into academic healthcare programs.

Another concern is the stigma surrounding mental illness among nursing students, as noted in the study's background and supported by other works (Al-Maqbali et al., 2023; Abdelmonaem et al., 2024). Nursing students may be less likely to seek help due to fear of judgment or professional consequences, reinforcing a cycle of untreated distress. Therefore, institutional support systems must go beyond passive mental health promotion and actively encourage anonymous screening programs, mandatory wellness workshops, peer support networks, and accessible professional counselling.

Therefore, early screening of OCBs and mental status using tools like OCI-R and DASS-21 within academic health programs is useful for identifying at-risk students early. On the other hand, nursing curricula should integrate mental health literacy and stress-management techniques such as stress management workshops, CBT-based group sessions, or psychoeducation to provide safe spaces for help-seeking. Faculty sensitization and destigmatization of mental health discussions are also essential to ensure students feel safe seeking help. Lastly, for cultural considerations, in Malaysian society, where emotional expression may be stigmatized, compulsive behaviours could be culturally sanctioned outlets for internal distress. Understanding this dynamic is vital for crafting effective interventions.

5.4 Limitations of the study

Despite its contributions, this study has several limitations that should be acknowledged. Firstly, reliance on self-administered tools (OCI-R and DASS-21) may have introduced self-reporting bias, especially given the stigma associated with mental illness in nursing students, possibly leading to underreporting of symptoms. Secondly, the sample was limited to undergraduate nursing students at a single institution (UNIMAS), thus limiting the generalizability of the findings to other populations or settings. Factors such as cultural norms, academic stress levels, and access to mental health support may differ significantly in other institutions. Lastly, the study did not control for relevant confounders such as prior mental health history, recent life stressors, or concurrent substance use, which could have influenced the relationship between OCB and mental health outcomes.

5.5 Conclusion

This study comprehensively investigated the relationship between obsessive-compulsive behaviours (OCBs) and mental health status among undergraduate nursing students at Universiti Malaysia Sarawak (UNIMAS). The findings demonstrate that OCBs are prevalent within this population and are significantly associated with symptoms of depression, anxiety, and stress. The research highlights that while not all nursing students exhibiting OCBs meet the clinical criteria for obsessive-compulsive disorder (OCD), the presence of these behaviours nonetheless correlates with poorer mental health outcomes. These behaviours, may be triggered or exacerbated by the academic and clinical pressures unique to nursing education, may serve as maladaptive coping mechanisms that ultimately impair students' psychological well-being.

Importantly, this study emphasizes the critical need for mental health support tailored to nursing students, including psychoeducation, stress management programs, and accessible counselling services. Early identification and intervention for OCBs can prevent progression to more severe disorders and foster resilience among students. By addressing these issues, nursing education institutions can improve not only the mental health and quality of life of their students but also enhance their future professional competence and patient care quality. In conclusion, this investigation confirms a clear and meaningful relationship between obsessive-compulsive behaviours and mental health status among nursing students at UNIMAS. It advocates for integrated strategies within nursing curricula and student support services to promote mental health awareness, reduce stigma, and provide timely, effective interventions.

REFERENCES

- Aamir, R. A. (2024). Obsessive Compulsive Disorder, its contributing factor and its relationship with depression among private medical students of Islamabad: an analytical cross-sectional study. *Isra Medical Journal*, 16(2), 63–66. <https://doi.org/10.55282/imj.oa1417>
- Abdelmonaem, Y. M. M., Osman, M. A., & Karim, N. a. H. A. (2024). Mental health stigma and internship nursing students' attitudes toward seeking professional psychological help: a cross-sectional study. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-01910-3>
- Abramowitz, J. S. (2022). Obsessive–Compulsive Disorder and Obsessive–Compulsive Related Disorders. In *Comprehensive Clinical Psychology* (2nd ed., Vol. 6, pp. 301–319). <https://doi.org/10.1016/b978-0-12-818697-8.00238-7>
- Abramowitz, J. S. (2023). Obsessive-Compulsive and Related Disorders. In *Oxford University Press eBooks* (pp. 181–198). <https://doi.org/10.1093/med-psych/9780197542521.003.0008>
- Al-Awad, F. A., Hadhiah, K., Albik, A., Abdulwahab, A., Almatiq, A., Alhumran, A., Alsaffar, H., Alomar, M., & BuSaad, M. A. (2024). Obsessive-compulsive Symptoms Prevalence among Medical Students in Four Major Universities, Saudi Arabia: A Cross-Sectional Study. *Clinical Practice and Epidemiology in Mental Health*, 20(1). <https://doi.org/10.2174/0117450179360311241216053222>
- Alblowy, A. a. M. (2022). Assessment of Obsessive-Compulsive Disorder among Nursing Students in Alriyada College in Jeddah and its Relationship to Some Variables. *International Journal of Nursing Education*, 14(2). <https://doi.org/10.37506/ijone.v14i2.17967>

- Al-Maqbali, R. M., Al-Hinaai, F. L., Al-Farsi, H. a. J., Al-Amari, M. A., Al-Shibli, M. S. M., A-Shibli, N. K. A., Al-Maqbali, Y. N. A., Al-Shibli, A. K. F., Al-Busaidi, M. D. A., & D’Costa, M. P. (2023). The stigmatizing attitude of Nursing students towards patients with Mental Illness. *Asian Journal of Nursing Education and Research*, 241–248. <https://doi.org/10.52711/2349-2996.2023.00051>
- Alsaweer, A. A., Darraj, M. T., Janahi, S. M., Aljowder, F. Y., Almoammari, N. S., Alkhater, N. I., Aldoseri, A. B., Alshaikh, A. A., Ali, A. K., Khaliqi, F. A., Mohsen, A. A., Almarabheh, A., & Husni, M. (2024). Prevalence of obsessive-compulsive symptoms among adult population in primary care centers in Bahrain – A cross-sectional study. *Journal of Family Medicine and Primary Care*, 13(8), 3031–3037. https://doi.org/10.4103/jfmpe.jfmpe_13_24
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)* (5th ed.). American Psychiatric Association.
- Ansari, M. M., & Khan, S. (2023). An In-depth examination of validity Assessment: exploring diverse methodologies and dimensions of validity in social research studies. *Asian Journal of Agricultural Extension Economics & Sociology*, 41(10), 772–782. <https://doi.org/10.9734/ajaees/2023/v41i102224>
- Babu, N., & Kohli, P. (2023). Commentary: Reliability in research. *Indian Journal of Ophthalmology*, 71(2), 400–401. https://doi.org/10.4103/ijo.ijo_2016_22
- Badillo-Sánchez, N., Gómez-Salgado, J., Allande-Cussó, R., Yildirim, M., López-López, D., Goniewicz, K., Prieto-Callejero, B., & Fagundo-Rivera, J. (2025). Impact of the COVID-19 pandemic on the mental health of Nursing students: A systematic review and meta-analysis. *Medicine*, 104(2), e40797. <https://doi.org/10.1097/md.00000000000040797>

- Basel, D., Magen, M., & Lazarov, A. (2023). Increased attention allocation to stimuli reflecting end-states of compulsive behaviors among obsessive-compulsive individuals. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-39459-x>
- Benster, L. L., Weissman, C. R., & Daskalakis, Z. J. (2022). Suicidal Ideation and Obsessive-Compulsive Disorder: Links and knowledge. *Psychology Research and Behavior Management, Volume 15*, 3793–3807. <https://doi.org/10.2147/prbm.s368585>
- Chapagain, S., Neupane, S., Pokhrel, I., & Kafle, T. K. (2023). Depression, Anxiety and Stress among Nursing Students at Biratnagar. *Journal of Nobel Medical College*, 12(2), 91–97. <https://doi.org/10.3126/jonmc.v12i2.61406>
- Coban, D., Tan, O., & Mu, B. (2024). Clinical and Sociodemographic Differences in Adult Women and Men with Obsessive-Compulsive Disorder. *Psychiatry and Behavioral Sciences*, 14(3), 167. <https://doi.org/10.5455/pbs.20240618101957>
- Costa, C. B., & Hardan-Khalil, K. (2018). Orthorexia nervosa and obsessive-compulsive behavior among college students in the United States. *Journal of Nursing Education and Practice*, 9(2), 67. <https://doi.org/10.5430/jnep.v9n2p67>
- Das, A., & Malakar, C. (2024). Psychiatric Co-morbidity with Obsessive Compulsive Disorder. *KYAMC Journal*, 14(04), 206–209. <https://doi.org/10.3329/kyamcj.v14i04.69239>
- Din, N. C., Nawi, L. M., Ghazali, S. E., Ahmad, M., Ibrahim, N., Said, Z., Amit, N., & Subramaniam, P. (2019). Preliminary Analysis of the Factor Structure, Reliability and Validity of an Obsessive-Compulsive Disorder Screening Tool for Use with Adults in Malaysia. *International Journal of Environmental Research and Public Health*, 16(23), 4763. <https://doi.org/10.3390/ijerph16234763>

- Elsayed, M. M., & Ghazi, G. A. (2021). Fear of COVID-19 Pandemic, Obsessive-Compulsive Traits and Sleep Quality among First Academic Year Nursing Students, Alexandria University, Egypt. *Egyptian Journal of Health Care*, 12(2), 224–241. <https://doi.org/10.21608/ejhc.2021.150261>
- El-Sayed, M. M., Elhay, E. S. A., Hawash, M. M., Sonbol, H. M., & Taha, S. M. (2024). A closer look: obsessive-compulsive symptoms among intern nurses amidst COVID-19 pandemic. *BMC Nursing*, 23(1). <https://doi.org/10.1186/s12912-024-01872-6>
- Evans, J. M. M., Andreis, F., Cameron, D. M., & Eades, C. E. (2021). How does the self-reported health of undergraduate nursing students change during their degree programme? Survey results from a Scottish University. *BMC Nursing*, 20(1). <https://doi.org/10.1186/s12912-021-00563-w>
- Foa, E. B., Huppert, J. D., Leiberg, S., Langner, R., Kichic, R., Hajcak, G., & Salkovskis, P. M. (2002). The Obsessive-Compulsive Inventory: Development and validation of a short version. *Psychological Assessment*, 14(4), 485–496. <https://doi.org/10.1037/1040-3590.14.4.485>
- Franjić, S. (2022). Mental Health is an Integral Part of the General Health. *MedPress Psychiatry and Behavioral Sciences*, 1(1). <https://doi.org/10.33582/mppbs.2022.202209002>
- Fullana, M. A., Tortella-Feliu, M., Caseras, X., Andiñ, Ó., Torrubia, R., & Mataix-Cols, D. (2005). Psychometric properties of the Spanish version of the Obsessive–Compulsive Inventory—Revised in a non-clinical sample. *Journal of Anxiety Disorders*, 19(8), 893–903. <https://doi.org/10.1016/j.janxdis.2004.10.004>

- Giasuddin, N. A., & Hossain, M. J. (2020). Understanding obsessive compulsive disorder and management options. *Faridpur Medical College Journal*, 15(1), 38–42. <https://doi.org/10.3329/fmcj.v15i1.49009>
- Hajcak, G., Huppert, J. D., Simons, R. F., & Foa, E. B. (2004). Psychometric properties of the OCI-R in a college sample. *Behaviour Research and Therapy*, 42(1), 115–123. <https://doi.org/10.1016/j.brat.2003.08.002>
- Hasan, A. (2020). Nursing Students' Attitudes and Stigma toward Mental Health Nursing: A Systematic Review. *Annals of Medical and Health Sciences Research*, 10(1), 804–815. <https://typeset.io/pdf/nursing-studentsa-attitudes-and-stigma-toward-mentalhealth-49json9sic.pdf>
- Hussein, M. T. E., & Mushaluk, C. (2023). The Impact of the COVID-19 Pandemic on the Mental Health of Nursing Students and New Graduate Nurses: A Scoping Review. *Research and Theory for Nursing Practice*, RTNP-0039.R1. <https://doi.org/10.1891/rtnp-2023-0039>
- Karnia, R. (2024). Importance of reliability and validity in research. *Psychology and Behavioral Sciences*, 13(6), 137–141. <https://doi.org/10.11648/j.pbs.20241306.11>
- Kerns, C. M., Albano, A. M., & Silverman, W. K. (2024). Obsessive-Compulsive Disorder and Other Compulsive Behaviors. In *Oxford University Press eBooks* (pp. 52–65). <https://doi.org/10.1093/med-psych/9780197586730.003.0011>
- Koike, H., Tsuchiyagaito, A., Hirano, Y., Oshima, F., Asano, K., Sugiura, Y., Kobori, O., Ishikawa, R., Nishinaka, H., Shimizu, E., & Nakagawa, A. (2017). Reliability and validity of the Japanese version of the Obsessive-Compulsive Inventory-Revised (OCI-R). *Current Psychology*, 39(1), 89–95. <https://doi.org/10.1007/s12144-017-9741-2>

- Lee, J. G., Amit, N., Che Din, N., Ghazali, S. E., Subramaniam, P., & Health Psychology Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia. (2020). A Review of Online Intervention for Obsessive-Compulsive Disorder (OCD). In *Jurnal Psikologi Malaysia* (Vol. 34, Issue 1, pp. 61–74). <https://journalarticle.ukm.my/14891/1/530-2040-1-PB.pdf>
- Li, P., Meng, L., & Ouyang, M. (2020). Mental Health Status of Chinese Student Nurses during COVID-19: A Cross-sectional Study. *Design Engineering*, 01–09. <https://doi.org/10.17762/de.vi.680>
- Li, Y. (2022). Research on the Education of Obsessive-compulsive Disorder Group in Colleges and Universities. *BCP Social Sciences & Humanities*, 16, 49–52. <https://doi.org/10.54691/bcpssh.v16i.438>
- López-Nicolás, R., Rubio-Aparicio, M., López-Ibáñez, C., & Sánchez-Meca, J. (2021). A Reliability Generalization Meta-analysis of the Dimensional Obsessive-Compulsive Scale. *Psicothema*, 33(3), 481–489. <https://doi.org/10.7334/psicothema2020.455>
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Psychology Foundation of Australia.
- Mahaswari, N. N. P. M. T. B. G., Jayanti, N. K. a. M., Syachran, N. P. a. A., & Sulistiowati, N. N. M. D. (2023). Mental Health Status of Undergraduate Nursing Students in Facing Professional Nursing Practices. *Caring Indonesian Journal of Nursing Science*, 5(2), 133–139. <https://doi.org/10.32734/ijns.v5i2.14305>
- Marincowitz, C., Koen, N., Lochner, C., & Stein, D. J. (2022). Obsessive–compulsive disorder. In *Elsevier eBooks* (pp. 825–842). <https://doi.org/10.1016/b978-0-323-85654-6.00012-5>
- Marlina, T. T. (2017). A DESCRIPTION STUDY OF NURSING STUDENTS IN CLINICAL PRACTICE. *Jurnal Keperawatan Respati Yogyakarta*, 4(3), 272–277. <https://doi.org/10.35842/jkry.v4i3.162>

- Mil, N. G., Chang, C., Chandran, D., Schirmbeck, F., Van Beveren, N., Shetty, H., Stewart, R., Ahn-Robbins, D., De Haan, L., & Hayes, R. D. (2024). Obsessive-compulsive symptoms relating to psychosocial functioning for people with schizophrenia, schizoaffective disorder, or bipolar disorder. *Acta Neuropsychiatrica*, 1–9. <https://doi.org/10.1017/neu.2024.42>
- Morton, C. (2022). Nursing students' experiences of seeking mental health support: a literature review. *Mental Health Practice*, 25(4), 20–26. <https://doi.org/10.7748/mhp.2022.e1604>
- Nazeer, A., Latif, F., Mondal, A., Azeem, M. W., & Greydanus, D. E. (2020). Obsessive-compulsive disorder in children and adolescents: epidemiology, diagnosis and management. *Translational Pediatrics*, 9(S1), S76–S93. <https://doi.org/10.21037/tp.2019.10.02>
- Neumbe, I. M., Ssenyonga, L., Soita, D. J., Iramiot, J. S., & Rebecca, N. (2022). Choice, Attitudes, and Perceptions of Undergraduate Nursing Students towards the Nursing Profession. *Research Square (Research Square)*. <https://doi.org/10.21203/rs.3.rs-1703013/v1>
- Olanipekun, A., Ahmed, V., Opoku, A., & Sutrisna, M. (2022). Understanding validity in research. In *Routledge eBooks* (pp. 16–26). <https://doi.org/10.1201/9780429243226-3>
- Olayinka, S., & Abideen, T. (2023). Reliability of research instruments in management sciences research: an explanatory perspective. *Scientific Papers of Silesian University of Technology Organization and Management Series*, 2023(166), 711–729. <https://doi.org/10.29119/1641-3466.2022.166.46>
- Osman, A., Wong, J. L., Bagge, C. L., Freedenthal, S., Gutierrez, P. M., & Lozano, G. (2012). The Depression Anxiety Stress Scales—21 (DASS-21): Further examination of dimensions, scale reliability, and correlates. *Journal of Clinical Psychology*, 68(12), 1322–1338. <https://doi.org/10.1002/jclp.21908>

- Piasek, L., Szafran, A., Wiśniewska, K., Ostańska, A., Terelak, W., Ciechański, M., Witkowska, E., Godek, G., Więclaw, K., & Stańko, K. (2023). Understanding obsessive-compulsive disorder - literature review. *Journal of Education Health and Sport*, 40(1), 64–110. <https://doi.org/10.12775/jehs.2023.40.01.009>
- Poreddi, V., Thimmaiah, R., Pashupu, D. R., Ramachandra, N., & Badamath, S. (2014). Undergraduate Nursing Students' Attitudes towards Mental Illness: Implications for Specific Academic Education. *Indian Journal of Psychological Medicine*, 36(4), 368–372. <https://doi.org/10.4103/0253-7176.140701>
- Radeef, A. S., Faisal, G. G., & Al-Kubaisi, M. (2019). Assessment of psychological distress among nursing undergraduate students in Malaysia. *International Journal of Medical Science*, 6(10), 1–40. <https://doi.org/10.14445/23939117/ijms-v6i10p101>
- Rowe, C., Deledalle, A., & Boudoukha, A. H. (2021). Psychiatric comorbidities of obsessive-compulsive disorder: A series of systematic reviews and meta-analyses. *Journal of Clinical Psychology*, 78(4), 469–484. <https://doi.org/10.1002/jclp.23240>
- Saad, S., Bshawri, J. A., Alsaedi, S. M., Radi, R. E., Ghonim, R. M., Nasraldain, H. M., & Gadeer, A. A. (2022). Social stigma among health-care providers toward patients with schizophrenia and obsessive-compulsive disorders at tertiary hospital in Makkah, Saudi Arabia. *Mental Health Review Journal*, 27(3), 281–294. <https://doi.org/10.1108/mhrj-11-2021-0078>
- Saeedi, M., Rafii, F., & Parvizy, S. (2019). Academic motivation in nursing students: A hybrid concept analysis. *Iranian Journal of Nursing and Midwifery Research*, 24(5), 315. https://doi.org/10.4103/ijnmr.ijnmr_177_18
- Sarhan, A. L., & Saleh, M. (2022). Prevalence and Associated Factors of Obsessive-Compulsive Disorder During COVID-19 Pandemic: A Cross-Sectional Study. In *Lecture notes in networks and systems* (pp. 1376–1383). https://doi.org/10.1007/978-3-031-08954-1_119

- Sarnin, E. F., Sharip, S., Idris, I. B., Hashim, S. M., Ismail, W. S. W., Rahman, F. N. A., Kamal, N., Mahady, Z. A., Baharim, N., Hamlett, G. E., & Foa, E. B. (2022). Psychometric properties of Malay obsessive-compulsive inventory-child version (OCI-CV) in Malaysian perspectives. *Scandinavian Journal of Child and Adolescent Psychiatry and Psychology*, 10(1), 114–122. <https://doi.org/10.2478/sjcapp-2022-0012>
- Sawadogo, K. C. C., Lameyre, V., Gerard, D., Bruand, P., & Preux, P. (2019). Knowledge, attitudes and practices in mental health of health professionals at the end of their curriculum in Burkina Faso: A pilot study. *Nursing Open*, 7(2), 589–595. <https://doi.org/10.1002/nop2.427>
- Seow, L. S. E., Chua, B. Y., Xie, H., Wang, J., Ong, H. L., Abdin, E., Chong, S. A., & Subramaniam, M. (2017). Correct recognition and continuum belief of mental disorders in a nursing student population. *BMC Psychiatry*, 17(1). <https://doi.org/10.1186/s12888-017-1447-3>
- Shafaghi, L., Arbabi, M., Tehrani-Doost, M., Batouli, S. A., Ziaa, M. J., & Hadjighassem, M. (2024). Characteristics of Functional Connections and Topographical Properties Distinguished the Healthy State and Obsessive-Compulsive Disorder. *Archives of Neuroscience*, 11(4). <https://doi.org/10.5812/ans-152403>
- Shoqeirat, M. A. (2021). Obsessive-Compulsive Symptom Prevalence among University Students and Associated Demographic Variables = انتشار أعراض اضطراب الوسواس القهري بين طلاب الجامعة وعلاقته ببعض المتغيرات الديموغرافية. *The Arab Journal of Psychiatry*, 32(1), 79–85. <https://doi.org/10.12816/0058768>
- Sica, C., Ghisi, M., Altoè, G., Chiri, L. R., Franceschini, S., Coradeschi, D., & Melli, G. (2009). The Italian version of the Obsessive Compulsive Inventory: Its psychometric properties on community and clinical samples. *Journal of Anxiety Disorders*, 23(2), 204–211.

- Siev, J., Lit, K., & Leykin, Y. (2019). Perceived decision-making styles among individuals with obsessive-compulsive and hoarding disorders. *Journal of Obsessive-Compulsive and Related Disorders*, 23, 100472. <https://doi.org/10.1016/j.jocrd.2019.100472>
- Silva, A. V., De Christo, R. B., Alves-Pereira, R., Alves, G. S., Ferreira, I. D., Cappi, C., Quarantini, L. C., & Sampaio, A. S. (2023). Experiential avoidance and obsessive-compulsive symptoms in University students. *Neuroscience Applied*, 3, 103924. <https://doi.org/10.1016/j.nsa.2023.103924>
- Simos, G., Zikopoulou, O., Nisyrailou, A., & Zafiroopoulos, K. (2019). Psychometric Properties of the Greek Version of the Obsessive-Compulsive Inventory-Revised in a Non-Clinical Young Adult Sample. *Psychology*, 10(16), 2247–2265. <https://doi.org/10.4236/psych.2019.1016142>
- Sloan, R. (2022). Obsessive-compulsive disorder and related disorders. *InnovAiT Education and Inspiration for General Practice*, 15(10), 595–601. <https://doi.org/10.1177/17557380221112682>
- Smári, J., Ólason, D. T., Eyþórsdóttir, Á., & Frölunde, M. (2007). Psychometric properties of the Obsessive Compulsive Inventory-Revised among Icelandic college students. *Scandinavian Journal of Psychology*, 48(2), 127–133. <https://doi.org/10.1111/j.1467-9450.2007.00574.x>
- Sokratous, S., Alexandrou, G., Zavrou, R., & Karanikola, M. (2023). Mental health status and stressful life events among postgraduate nursing students in Cyprus: a cross-sectional descriptive correlational study. *BMC Nursing*, 22(1). <https://doi.org/10.1186/s12912-023-01463-x>
- Solomon, B., Topp, M., Solomon, D. J. A., & Solomon, D. (2024). Mental Health Experiences Among Undergraduate Nursing Students in a New Zealand Tertiary Institution: A Time for Change. *International Journal of Mental Health Nursing*. <https://doi.org/10.1111/inm.13464>

- Stein, D. J., Costa, D. L. C., Lochner, C., Miguel, E. C., Reddy, Y. C. J., Shavitt, R. G., Van Den Heuvel, O. A., & Simpson, H. B. (2019). Obsessive–compulsive disorder. *Nature Reviews Disease Primers*, 5(1). <https://doi.org/10.1038/s41572-019-0102-3>
- Sultan, S., Fallata, E. O., Bashar, M. A., Olaqi, E. E., Alsharif, G. H., BinSaleh, R. A., & Fakieh, R. A. (2020). Prevalence, sociodemographic and academic correlates of obsessive-compulsive disorder in the students of college of applied medical sciences, Umm Al-Qura university. *Journal of Obsessive-Compulsive and Related Disorders*, 28, 100604. <https://doi.org/10.1016/j.jocrd.2020.100604>
- Taber, K. S. (2017). The use of Cronbach’s Alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Taher, T. M. J., Al-Fadhul, S. a. L., Abutiheen, A. A., Ghazi, H. F., & Abood, N. S. (2021). Prevalence of obsessive-compulsive disorder (OCD) among Iraqi undergraduate medical students in time of COVID-19 pandemic. *Middle East Current Psychiatry*, 28(1). <https://doi.org/10.1186/s43045-021-00086-9>
- Tan, G. T. H., Shahwan, S., Goh, C. M. J., Ong, W. J., Wei, K., Verma, S. K., Chong, S. A., & Subramaniam, M. (2020). Mental illness stigma’s reasons and determinants (MISReaD) among Singapore’s lay public – a qualitative inquiry. *BMC Psychiatry*, 20(1). <https://doi.org/10.1186/s12888-020-02823-6>
- Torres, A. R., Cruz, B. L., Vicentini, H. C., Lima, M. C. P., & Ramos-Cerqueira, A. T. A. (2015). Obsessive-Compulsive Symptoms in Medical Students: Prevalence, severity, and correlates. *Academic Psychiatry*, 40(1), 46–54. <https://doi.org/10.1007/s40596-015-0357-2>

- Uddin, J., & Fariha, T. (2024). Examining Anxiety and Depression Levels among Undergraduate Nursing Students: A Cross-Sectional Study. *Research Square (Research Square)*. <https://doi.org/10.21203/rs.3.rs-4308747/v1>
- Usman, M. (2019). Does constant advertising change consumer attitude? *Journal of Business & Retail Management Research*, 13(04). <https://doi.org/10.24052/jbrmr/v13is04/art-25>
- Wagstaff, C. (2024). Obsessive compulsive disorder: overview of the condition and its nursing management. *Nursing Standard*, 39(6), 45–50. <https://doi.org/10.7748/ns.2024.e12269>
- Woo, C., Kwon, S., Lim, Y., & Shin, M. (2010). The Obsessive-Compulsive Inventory-Revised (OCI-R): Psychometric properties of the Korean version and the order, gender, and cultural effects. *Journal of Behavior Therapy and Experimental Psychiatry*, 41(3), 220–227. <https://doi.org/10.1016/j.jbtep.2010.01.006>
- Wootton, B. M., Diefenbach, G. J., Bragdon, L. B., Steketee, G., Frost, R. O., & Tolin, D. F. (2015). A contemporary psychometric evaluation of the Obsessive Compulsive Inventory—Revised (OCI-R). *Psychological Assessment*, 27(3), 874–882. <https://doi.org/10.1037/pas0000075>
- Yamane, T. (1973). *Statistics: an Introductory Analysis* (3rd ed.). Harper & Row, 1973.

APPENDICES

APPENDIX A: Cover Letter for Ethical Application

Nur Afeeza Binti Arbi,

Faculty Medicine and Health Sciences,
Universiti Malaysia Sarawak,
94300 Kota Samarahan,
Sarawak.

The Chairman,

Medical Research Ethics Committee,
Faculty Medicine and Health Sciences,
Universiti Malaysia Sarawak,
94300 Kota Samarahan,
Sarawak.

15th December 2024

Professor/Associate Professor/Dr/Sir/Madam,

REQUEST FOR APPROVAL TO CONDUCT RESEARCH PROJECT

I am a final-year student pursuing a Bachelor of Nursing with Honours at the Faculty of Medicine and Health Sciences, UNIMAS. I enrolled in MDJ 4653 Final Year Project I, in which the course is coordinated by Madam Shalin Lee Wan Fei. Please find my details as follows:

Full name: Nur Afeeza Binti Arbi

Matrix number: 78338

IC No.: 020730-13-1116

I would like to request for the kind approval from the Faculty of Medicine and Health Sciences Medical Research Ethics Committee to conduct the following study:

Research title: The Investigation into Obsessive-Compulsive Behaviours and Mental Health Status Among Undergraduate UNIMAS Nursing Students

Supervisor's name: Dr. T Saraswathy Thangarajoo

Email address: ttsaraswathy@unimas.my

Supervisor's HP number: 013-3448979

Please find the required documents as appended for your kind consideration and approval.

Thank you.

Yours sincerely,

Feeza

(NUR AFEEZA BINTI ARBI)

APPENDIX B: Participant Information Sheet (PIS) and Informed Consent



PARTICIPANT INFORMATION SHEET/ *MAKLUMAT KAJIAN PESERTA*

1. Title of the study/ *Tajuk kajian*: The Investigation into Obsessive-Compulsive Behaviours and Mental Health Status Among Undergraduate UNIMAS Nursing Students

2. Main Researcher/

***Penyelidik utama*: Nur Afeeza Binti Arbi**

3. Supervisor/ *Penyelia*: a) Course coordinator: Shalin Lee Wan Fei

b) Main research supervisor: Dr. T Saraswathy Thangarajoo

4. Institution/ *Institut*: Department of Nursing

Faculty of Medicine & Health Sciences Universiti Malaysia Sarawak

5. Name of sponsor/ *Nama Penaja*: No external funding/ *Tiada penaja luar*

PARTICIPANT INFORMATION SHEET AND INFORMED CONSENT FORM

(for adult subjects)

6. Introduction:

It is important that you understand why the research is being done and what it will involve. Please take your time to read through and consider this information carefully before you decide if you are willing to participate. Ask the study staff if anything is unclear or if you would like more information. After you are properly satisfied that you understand this study, and that you wish to participate, you must sign this informed consent form.

Your participation in this study is voluntary. You do not have to be in this study if you do not want to. You may also refuse to answer any questions you do not want to answer. If you volunteer to be in this study, you may withdraw from it at any time. If you withdraw, any data collected from you up to your withdrawal will still be used for the study. Your refusal to participate or withdrawal will not affect any medical or health benefits to which you are otherwise entitled.

This study has been approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia.

7. What is the purpose of the study?

The purpose of this study is to investigate the prevalence of obsessive-compulsive behaviours and explore their relationship with overall mental health status among undergraduate nursing students at Universiti Malaysia Sarawak (UNIMAS). This research is necessary to reveal significant insights into the mental health challenges that may result from obsessive-compulsive behaviours faced by nursing students. It also consequently aims to guide educational strategies and support systems that foster resilience and effective coping mechanisms.

This research will be conducted for duration of 6 months (25/01/2025 till 30/06/2025) The expected number of participants is 164 individuals.

8. Who can participate in this study?

The study focuses on investigating the behaviours of obsessive-compulsive and their relationship with mental health status among undergraduate UNIMAS nursing students. This study targets all undergraduate UNIMAS nursing students from year 1 until year 4 since everybody may have obsessive-compulsive behaviours whether they are aware of it or not. Participants of this study must meet the inclusion and exclusion criteria to ensure the study's relevance and reliability. The inclusion criteria are undergraduate nursing students from year 1 until year 4 who are willing to take part in the study. The exclusion criteria are those who have participated in the pilot study and students from other programs. These exclusion criteria are established to ensure a representative and homogeneity that can reduce variability in responses that might arise from including students from other programs or educational levels, thereby enhancing the reliability and validity of the findings. Therefore, this study is only focusing on undergraduate UNIMAS nursing students.

9. What are my responsibilities when taking part in this study?

It is important that you answer all of the questions asked by the study staff honestly and completely, which will take about 15-20 minutes of your time. You will be given an online questionnaire form to be answered consisting of three sections, which are Section A, Section B, and Section C. Section A will ask about the sociodemographic information, while Section B consists of questions to investigate your obsessive-compulsive behaviors, and lastly, Section C has the questions to identify your mental health status.

10. What are the potential risks and side effects of being in this study?

Participation in this study will not affect your treatment, and the risk is minimal. You are free to decline to answer any of the questions that you feel uncomfortable with.

11. What are the benefits of being in this study?

There may or may not be any benefits to you. Information obtained from this study will help to emphasize the importance of targeted mental health support and educational initiatives for nursing students to mitigate the effects of obsessive-compulsive behaviors on mental health status. The findings from this study will also contribute to developing educational strategies that address gaps in knowledge of obsessive-compulsive behaviors by investigating these behaviors among nursing students. The findings can provide insights specifically tailored to nursing education and practice.

12. Who is funding the research?

This study does not receive any external funding in which it is fully sponsored by the main study researcher. You will not be paid for participating in this study.

13. Will my medical information be kept private?

All your information obtained in this study will be kept and handled in a confidential manner, in accordance with applicable laws and/or regulations. When publishing or presenting the study results, your identity will not be revealed without your expressed consent. Individuals involved in this study, qualified monitors and auditors, and governmental or regulatory authorities may inspect the study data, where appropriate and necessary.

14. Who should I call if I have questions?

If you have any questions about the study or if you think you have a study related injury and you want information about this study, please contact the study doctor, Nur Afeeza Binti Arbi at telephone number [014-8878929].

If you have any questions about your rights as a participant in this study, please contact: The Secretary, Medical Research & Ethics Committee, Ministry of Health Malaysia, at telephone number 03-3362 8407/8205/8888.

INFORMED CONSENT FORM

Title of Study: The Investigation into Obsessive-Compulsive Behaviours and Mental Health Status Among Undergraduate UNIMAS Nursing Students

By signing below I confirm the following:

- I have been given oral and written information for the above study and have read and understood the information given.
- I have had sufficient time to consider participation in the study and have had the opportunity to ask questions, and all my questions have been answered satisfactorily.
- I understand that my participation is voluntary, and I can at anytime free withdraw from the study without giving a reason, and this will in no way affect my future treatment. I am not taking part in any other research study at this time. I understand the risks and benefits, and I freely give my informed consent to participate under the

conditions stated. I understand that I must follow the study doctor's (investigator's) instructions related to my participation in the study.

- I understand that study staff, qualified monitors and auditors, the sponsor or its affiliates, and governmental or regulatory authorities, have direct access to my medical record in order to make sure that the study is conducted correctly and the data are recorded correctly. All personal details will be treated as STRICTLY CONFIDENTIAL
- I will receive a copy of this subject information/informed consent form signed and dated to bring home.
- I agree/disagree* for my family doctor to be informed of my participation in this study. (**delete which is not applicable*)

Subject:

Signature:

I/C number:

Name:

Date:

Investigator conducting informed consent:

Signature:

I/C number:

Name:

Date:

Impartial witness:

Signature:

I/C number:

Name:

Date:

APPENDIX C: Questionnaire

Section A: Sociodemographic Data

1. Age:

- ☐ ≤ 20 years
- ☐ 21 – 30 years

2. Gender:

- ☐ Male
- ☐ Female

3. Religion:

- ☐ Islam
- ☐ Christian
- ☐ Hindu
- ☐ Buddhist

Others: _____

4. Race:

- ☐ Malay
- ☐ Chinese
- ☐ India
- ☐ Bumiputera Sarawak
- ☐ Bumiputera Sabah

Others: _____

5. Year of study:

- ☐ Year 1
- ☐ Year 2
- ☐ Year 3
- ☐ Year 4

6. GPA average:

- ☐ 3.50 – 4.00
- ☐ 3.00 – 3.49
- ☐ 2.50 – 2.99
- ☐ 2.00 – 2.49
- ☐ ≤ 1.99

Section B: Obsessive-Compulsive Inventory-Revised (OCI-R)

The OCI-R is a self-rating scale that is designed to assess the severity and type of symptoms of those potentially dealing with OCD.

Instructions:

Before you begin the test, read the following definitions of “obsessions” and “compulsions.”

Obsessions are unwelcome or distressing ideas, thoughts, images or impulses that repeatedly enter your mind. They may seem to occur against your will. They may be repugnant to you, are often senseless, and may not fit your actual personality at all (for example, the recurrent thought or impulse to harm to your children, even though you never would).

Compulsions are behaviors or acts that you feel driven to perform, even though you may recognize them as senseless or excessive. At times, you may try to resist doing them, but this may prove difficult. You may experience anxiety that does not diminish until the behavior is completed.

The following statements refer to experiences that many people have in their everyday lives. Select the answer that best describes how much that experience has distressed or bothered you.

	Not at all	A little	Moderately	A lot	Extremely
1. I have saved up so many things that they get in the way.	☐	☐	☐	☐	☐
2. I check things more often than necessary.	☐	☐	☐	☐	☐
3. I get upset if objects are not arranged properly.	☐	☐	☐	☐	☐

4. I feel compelled to count while I am doing things.	☐	☐	☐	☐	☐
5. I find it difficult to touch an object when I know it has been touched by strangers or certain people.	☐	☐	☐	☐	☐
6. I find it difficult to control my own thoughts.	☐	☐	☐	☐	☐
7. I collect things I don't need.	☐	☐	☐	☐	☐
8. I repeatedly check doors, windows, drawers, etc.	☐	☐	☐	☐	☐
9. I get upset if others change the way I have arranged things.	☐	☐	☐	☐	☐
10. I feel I have to repeat certain numbers.	☐	☐	☐	☐	☐
11. I sometimes have to wash or clean myself simply because I feel contaminated.	☐	☐	☐	☐	☐
12. I am upset by unpleasant thoughts that come into my mind against my will.	☐	☐	☐	☐	☐
13. I avoid throwing things away because I am afraid I might need them later.	☐	☐	☐	☐	☐
14. I repeatedly check gas and water	☐	☐	☐	☐	☐

taps and light switches after turning them off.					
15. I need things to be arranged in a particular way.	☐	☐	☐	☐	☐
16. I feel that there are good and bad numbers.	☐	☐	☐	☐	☐
17. I wash my hands more often and longer than necessary.	☐	☐	☐	☐	☐
18. I frequently get nasty thoughts and have difficulty in getting rid of them.	☐	☐	☐	☐	☐

Section C: Depression, Anxiety, and Stress Scale-21 (DASS-21)

Please read each statement and select a number 0, 1, 2 or 3 that 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

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

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

3 Applied to me very much, or most of the time

	0	1	2	3
1. I found it hard to wind down	☐	☐	☐	☐
2. I was aware of dryness of my mouth	☐	☐	☐	☐
3. I couldn't seem to experience any positive feeling at all	☐	☐	☐	☐
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	☐	☐	☐	☐

5. I found it difficult to work up the initiative to do things	☐	☐	☐	☐
6. I tended to over-react to situations	☐	☐	☐	☐
7. I experienced trembling (eg, in the hands)	☐	☐	☐	☐
8. I felt that I was using a lot of nervous energy	☐	☐	☐	☐
9. I was worried about situations in which I might panic and make a fool of myself	☐	☐	☐	☐
10. I felt that I had nothing to look forward to	☐	☐	☐	☐
11. I found myself getting agitated	☐	☐	☐	☐
12. I found it difficult to relax	☐	☐	☐	☐
13. I felt down-hearted and blue	☐	☐	☐	☐
14. I was intolerant of anything that kept me from getting on with what I was doing	☐	☐	☐	☐
15. I felt I was close to panic	☐	☐	☐	☐
16. I was unable to become enthusiastic about anything	☐	☐	☐	☐
17. I felt I wasn't worth much as a person	☐	☐	☐	☐
18. I felt that I was rather touchy	☐	☐	☐	☐
19. 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)	☐	☐	☐	☐
20. I felt scared without any good reason	☐	☐	☐	☐
21. I felt that life was meaningless	☐	☐	☐	☐

APPENDIX D: Permission Obtained from Original Author to Use Questionnaire



NUR AFEEZA BINTI ARBI

To: foa@mail.med.upenn.edu



Wed 12/11/2024 1:54 AM

Good day,

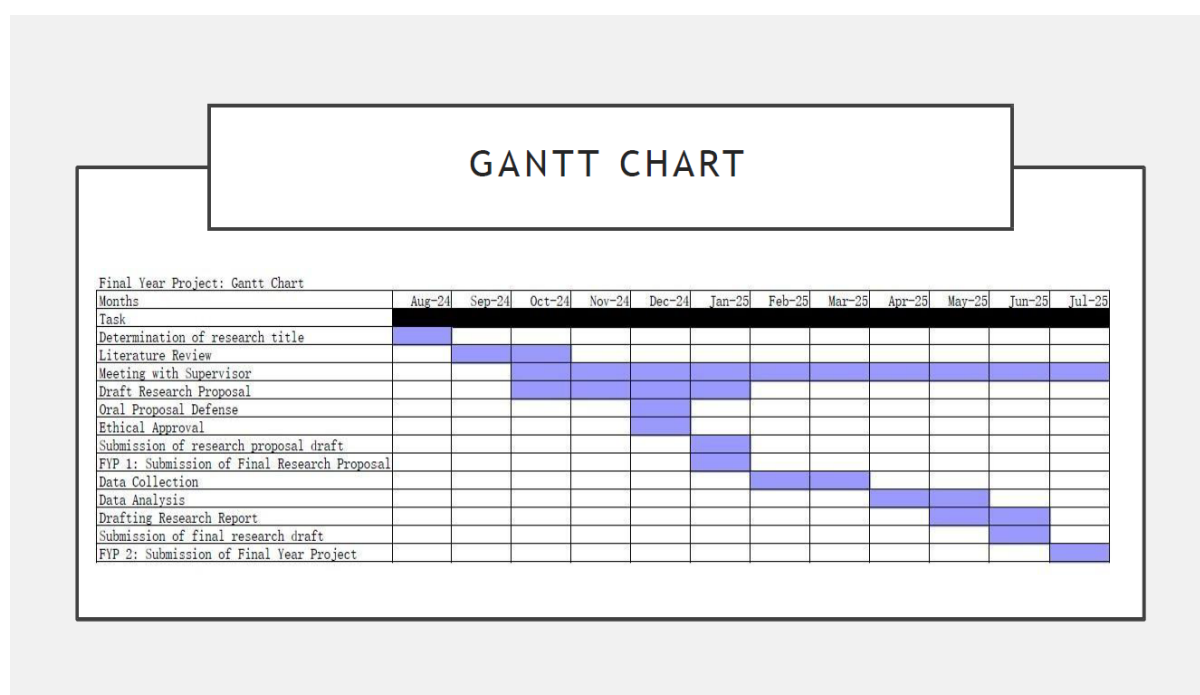
I am Nur Afeeza Arbi, a year 4 undergraduate nursing student from Universiti Malaysia Sarawak (UNIMAS). I am currently pursuing my study in the Year 4 Bachelor of Nursing with Honour program. I need to conduct research for my Final Year Project and I am doing research on "Assessing Obsessive Compulsive Behaviours and Their Association to Mental Health Status Among Undergraduate UNIMAS Nursing Students"

I came across your questionnaire titled "Obsessive Compulsive Inventory-Revised (OCI-R)" published in 2002. As per discussion with my supervisor, we would like to seek your permission to use your questionnaire (OCI-R), which is the revised version with 18 items and in English version for this research.

If you may, It would be much appreciated if you could attach the full list of the questionnaire here for my research proposes.

All ethical considerations will be followed as per the university

APPENDIX E: Gantt Chart



APPENDIX F: Expenditure

Items	Amount (RM)
Internet data plan for 6 months	240
Installation of SPSS software	5
Print poster	40
Printing and binding of final report	60
Total	345

APPENDIX G: Turnitin Similarity Index Report (Pages with Percentages)

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