

CHAPTER I

INTRODUCTION

1.1 Research Background

Mental health is crucial to achieving overall well-being. It deserves as much attention as physical health. There is no health without mental health, as defined by the World Health Organization (WHO), which states that “health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.”¹

The prevalence and severity of mental health issues have increased over the last decade. One in four people living with mental disorders globally resides in the WHO Southeast Asia Region.² A significant number of young people (aged 12–25) worldwide are experiencing poor mental health. One in two young individuals under the age of 25 will face mental health challenges at some point, and 75% of mental illnesses begin before the age of 25.³ Based on the results of the Asia Care Survey 2024 conducted by Manulife, Indonesians are not only concerned about physical illnesses but also a range of mental health issues. Stress or burnout ranks first, affecting 56% of the population.⁴

Ironically, Indonesia is currently witnessing a surge in suicide cases, most of which involve university students (young people aged 19–25). According to data from the National Criminal Information Center (Pusiknas) of the Indonesian National Police (Polri), there were 971 suicide cases in Indonesia from January to October 18, 2023. This number has already surpassed the 900 suicide cases recorded throughout 2022. One of the groups most vulnerable to suicide is university students.⁵ A study shows that the prevalence of depression reaches 25%,

¹ World Health Organization, “Comprehensive Mental Health Action Plan 2013-2030,” *Geneva*, 2021.

² Dr Poonam Khetrapal Singh, “Mental Health Conditions in the WHO South-East Asia Region” (New Delhi, 2023).

³ World Economic Forum, “A Global Youth Mental Health Advocacy Toolkit,” *Orygen*, 2020.

⁴ Theresia Gracia Simbolon, “Gangguan Kesehatan Mental Yang Paling Dikhawatirkan Masyarakat Indonesia,” 2024, <https://dataindonesia.id/varia/detail/hasil-survei-masalah-kesehatan-mental-yang-paling-dikhawatirkan-masyarakat-indonesia-pada-2024>.

⁵ Bekasi Media.com, “Tren Bunuh Diri Di Kalangan Mahasiswa Sepanjang 2023, Apa Solusinya?,” December 23, 2023, <https://bekasimedia.com/2023/12/23/tren-bunuh-diri-di-kalangan-mahasiswa-sepanjang-2023-apa-solusinya/>.

anxiety 51.1%, and stress 38.9%. These findings highlight that anxiety and stress require particular attention regarding mental health, especially within the university environment.⁶

Mental health disorders experienced by university students are categorized as high. First-year students and final-year students commonly encounter academic anxiety. One of the primary factors contributing to psychological stress among students is the final project, commonly referred to as a thesis.⁷ A Thesis aims to enhance students' analytical skills based on scientific principles. It results in a scientific paper as the final project report.⁸ Final-year students' stress can also be triggered by difficulties and obstacles arising from external factors, such as supervisors or other parties while completing their thesis or final project. Five new factors influencing the stress of final-year students have been identified, including the supervisor's role, literature review, analysis method, support system, and research gap.⁹ One of the scales used to measure the levels of depression, anxiety, and stress in individuals is the DASS-42 (Depression Anxiety Stress Scale). This scale consists of 42 questions that categorize individuals into several levels, including normal, mild, moderate, severe, and extremely severe.¹⁰

Based on gender, the number of female respondents is higher than male respondents, accounting for 64.7%. In dealing with stress, women generally have lower coping abilities than men, which makes them more susceptible to psychological disorders. Additionally, many women tend to have sensitive

⁶ Erni Astutik et al., "Depression, Anxiety, and Stress among Students in Newly Established Remote University Campus in Indonesia," *Malaysian Journal of Medicine and Health Sciences*, vol. 16, 2020.

⁷ Arif Tri Setyanto, "Deteksi Dini Prevalensi Gangguan Kesehatan Mental Mahasiswa Di Perguruan Tinggi," *Wacana* 15, no. 1 (February 6, 2023): 66, <https://doi.org/10.20961/wacana.v15i1.69548>.

⁸ Sri Suhandiah, Ayuningtyas Ayuningtyas, and Pantjawati Sudarmaningtyas, "Tugas Akhir Dan Faktor Stres Mahasiswa," *JAS-PT (Jurnal Analisis Sistem Pendidikan Tinggi Indonesia)* 5, no. 1 (July 26, 2021): 65, <https://doi.org/10.36339/jaspt.v5i1.424>.

⁹ Nabila and Andita Sayekti, "Manajemen Stres Pada Mahasiswa Dalam Penyusunan Skripsi Di Institut Pertanian Bogor Stress Management for Undergraduate Students in Writing Thesis at IPB University," *Jurnal Manajemen Dan Organisasi (JMO)* 12, no. 2 (2021): 156–65.

¹⁰ Amira Mohammed Ali et al., "The Depression Anxiety Stress Scale 21: Development and Validation of the Depression Anxiety Stress Scale 8-Item in Psychiatric Patients and the General Public for Easier Mental Health Measurement in a Post COVID-19 World," *International Journal of Environmental Research and Public Health* 18, no. 19 (October 1, 2021), <https://doi.org/10.3390/ijerph181910142>.

character traits¹¹ Among the many universities in Indonesia, Darussalam Gontor University (UNIDA) is one of the universities with an Islamic boarding school system, divided into two campuses: the Male Campus located in Ponorogo and the Female Campus located in Mantingan, Ngawi. With a student population of 5,076, the university houses 7 faculties and 18 undergraduate programs.

Mental health is also described in the Quran, in Surah Al-Baqarah, verse 155, which states:

وَلَنَبْلُوَنَّكُمْ بِشَيْءٍ مِّنَ الْخَوْفِ وَالْجُوعِ وَنَقْصٍ مِّنَ الْأَمْوَالِ وَالْأَنْفُسِ وَالثَّمَرَاتِ وَبَشِّرِ الصَّابِرِينَ (البقرة : 155)

“And We will surely test you with something of fear and hunger and a loss of wealth and lives and fruits, but give good tidings to the patient.” (Al-Baqarah: 155)

The verse above explains that Allah firmly states that He will test humanity. These tests are often felt through hardships, difficulties, and burdens, as described in the verse where Allah mentions the trials of fear, hunger, lack of wealth, lives, and fruits. All the trials given to humans are related to their needs, which can make individuals feel in a state of difficulty and despair.¹²

Several researchers have found that in the journal Analysis of Diagnostic Data for Personality Disorder Classification Using the C4.5 Algorithm, primary data obtained from a community questionnaire was used for the classification process. The classification accuracy value achieved by applying the C4.5 algorithm resulted in an accuracy rate of 72.67%.¹³ In the journal Implementation of the Naïve Bayes Algorithm for Mental Health Survey Classification, which used data from the Open Source Mental Illness (OSMI) consisting of 1,254 records, an accuracy result of 72% was achieved.¹⁴ In another article titled Comparison of the Naïve

¹¹ Nurul Romadhona et al., “Level of Depression, Anxiety, and Stress of College Students in Indonesia during the Pandemic COVID-19,” *Global Medical and Health Communication (GMHC)* 9, no. 3 (December 31, 2021), <https://doi.org/10.29313/gmhc.v9i3.8337>.

¹² Samain and Budihardjo, “KONSEP KESEHATAN MENTAL DALAM AL-QUR’ÂN DAN IMPLIKASINYA TERHADAP ADVERSITY QUOTIENT PERSPEKTIF TAFSIR AL-MISBAH,” 2020.

¹³ Siska Febriani and Heni Sulistiani, “Analisis Data Hasil Diagnosa Untuk Klasifikasi Gangguan Kepribadian Menggunakan Algoritma C4.5,” *Jurnal Teknologi Dan Sistem Informasi (JTSl)*, 2021.

¹⁴ Reza Alfaresy Chaerudin et al., “Implementasi Algoritma Naïve Bayes Untuk Analisis Klasifikasi Survei Kesehatan Mental (Studi Kasus: Open Sourcing Mental Illness),” 2022.

Bayes Classifier and Support Vector Machine Algorithms for Mental Health Data Classification of University Students, using data from Kaggle, the accuracy result from the Support Vector Machine algorithm was 94.37%. In comparison, the Naïve Bayes Classifier achieved an accuracy of 86.87%. The high accuracy indicates that the Support Vector Machine algorithm's performance is more optimal than the Naïve Bayes Classifier algorithm.¹⁵

Building on previous research findings, the author intends to conduct further research on the classification of mental health in female university students using the Support Vector Machine (SVM) method. SVM can effectively handle both continuous and categorical variables.¹⁶ The Support Vector Machine (SVM) method is a learning system that uses a hypothesis space in the form of linear functions within a feature space with high dimensions. It is trained using learning algorithms based on optimization theory. The SVM method is considered a relatively new technique compared to other methods. Choosing the appropriate and suitable kernel function is crucial because the kernel function will determine the feature space where the classifier function will be found.

Based on the issues and explanations mentioned above, the author intends to address the mental health case among university students through a study titled Analysis of Mental Health Classification in Female Students Undertaking Their Final Projects Using the Support Vector Machine Algorithm. This research is expected to result in an intelligent system capable of concluding whether an individual has the potential to experience mental health disorders using the Support Vector Machine (SVM) method.

1.2 Research Problem

¹⁵ Habib Dwi Putra, Luthfia Khairani, and Delvi Hastari, "Perbandingan Algoritma Naive Bayes Classifier Dan Support Vector Machine Untuk Klasifikasi Data Kesehatan Mental Mahasiswa," 2023, <https://journal.irpi.or.id/index.php/sentimas>.

¹⁶ Sourish Ghosh, Anayusa Dasgupta, and Aleena Swetapadma, *A Study on Support Vector Machine Based Linear and Non-Linear Pattern Classification* (International Conference on Intelligent Sustainable Systems (ICISS), 2019).

The research problem formulated by the researcher, derived from the background explanation, highlights that mental health issues experienced by students are categorized as high, particularly among final-year female students. Therefore, an analysis is needed to classify the mental health status of final-year female students.

1.3 Problem Limitations

To ensure that the formulated problem remains focused and the findings are applicable, the following limitations for this research are defined:

1. The case study is conducted at Darussalam Gontor University (UNIDA), Mantingan, Ngawi, East Java, a region with unique socio-cultural factors that may influence the mental health of its female students.
2. The data used in this study is obtained from questionnaires completed by female UNIDA students working on their final projects. The questionnaire is based on the DASS-42 (anxiety and stress sections), which has been paraphrased and validated by psychologist Sriati, M.Psi. Additionally, the questionnaire includes supplementary questions regarding mental health factors, such as stress and anxiety, related to completing the final project.
3. This research classifies Anxiety and Stress levels into Normal, Mild, Moderate, Severe, and Extremely Severe categories using the Support Vector Machine method.

1.4 Research Objectives

Based on the research problem stated above, the objective of this study is to conduct a classification analysis of the mental health data of final-year female students by identifying the factors that influence their mental health during the completion of their final projects.

1.5 Research Benefits

The benefits that the author expects with this research are as follows :

1.5.1 For Students

1. To serve as a basis for developing data mining focusing on mental health.

2. To enable the evaluation of preventive measures for mental health disorders, particularly regarding depression, anxiety, and stress in female students.

1.5.2 For Author

1. To classify the levels of mental health disorders in female students and evaluate the accuracy of the classification process by the model.

1.5.3 For the University

1. To provide personalized care recommendations by analyzing female students' data.
2. To demonstrate the ability of female students to master course material during their academic period.
3. To prove the ability of female students to apply their knowledge as an evaluation material for the students.

