Understanding The Causal Pathways of Mental Health Symptoms in Indonesia

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ABSTRACT

Background: *Mental disorders affect an individual's ability to manage stress, pursue education, work, and contribute productively to society. Among the productive-age population, the prevalence of mental disorders reaches 15%, with age, education level, and gender identified as contributing factors.* ***Objective:*** *This study aims to screen for mental disorders experienced by the Indonesian population and analyze the causal factors associated with various mental health symptoms.* ***Methods:*** *A quantitative, observational-analytic, cross-sectional study was conducted in 2023, involving 2,081 residents aged 18 and above from all provinces. Primary data were collected online via Google Forms. Analytical approaches included univariate, bivariate (chi-square), multivariate (logistic regression), and path analysis.* ***Results:*** *Mental health disorders were experienced by 84.2% of participants. The most vulnerable groups were females, those with low education levels, and individuals aged 17–35 years. These variables impacted different symptoms, such as anxiety, substance abuse, psychotic disorders, and PTSD. Specifically, individuals aged 17–35 were more susceptible to anxiety, psychotic disorders, and PTSD. Women were more prone to anxiety, substance abuse, psychosis, and PTSD. Participants with low education levels were more associated with anxiety and psychotic disorders. Path analysis revealed psychotic symptoms as the final common pathway, influenced by preceding symptoms of anxiety and PTSD.* ***Conclusion:*** *Early detection and treatment are crucial, as mild symptoms may progress to psychosis and manifest as physical illnesses resulting from psychological disturbances.*

Keywords: *Mental Health Disorder, Psychotic, PTSD*

INTRODUCTION

Mental health is a crucial aspect of individual and societal well-being. Mental health disorders can affect a person's ability to cope with life's pressures, pursue education, work, and contribute to their community (Adventinawati, 2025). However, mental health often receives insufficient attention and treatment, despite its significant impact on individuals and the economy. Many countries allocate less than 1% of their health budgets to mental health, especially in low-income nations, resulting in substantial gaps in care. Consequently, many sufferers receive low-quality services and may face human rights violations (Patel *et al.*, 2018).

In 2024, Indonesia's productive-age population (15-64 years) reached 196,558,195 people, constituting 69.58% of the total population of 282,477,584 (Ministry of Home Affairs of the Republic of Indonesia, 2024). Approximately 15% of this demographic experiences mental disorders (World Health Organization, 2024). This indicates millions of Indonesians are at risk of mental health problems that can impact productivity and well-being.

Factors influencing mental disorders among productive-age adults include age, education, and gender. In Indonesia,

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

depression prevalence in 2023 was 1.4%, highest among the 15-24 age group (2%). Education level also affects depression rates, with junior high school graduates experiencing the highest (2.2%) and those with higher education the lowest (1.6%). Gender differences are notable; 11.1% of young men and 2.8% of young women reported depression (Ministry of Health Republic of Indonesia, 2023). Globally, women tend to have poorer mental health than men, with higher rates of mood and anxiety disorders, while men have higher externalizing disorders and suicide rates (Campbell, Bann and Patalay, 2021); (Kiely, Brady and Byles, 2019).

Lack of awareness about mental health risks leads many individuals to conceal their conditions until symptoms worsen, sometimes progressing to severe disorders like schizophrenia, characterized by hallucinations and delusions (Rinawati and Alimansur, 2016). Depression, one of the most common mental disorders, significantly contributes to suicide risk; individuals with depression are nearly five times more likely to have suicidal thoughts. In Indonesia, 61% of young people who experienced depression in the past month had contemplated ending their lives, highlighting the urgent need for increased mental health attention and intervention (Ministry of Health Republic of Indonesia, 2023).

Mental health disorders also have profound economic impacts. Conditions such as depression and anxiety are linked to lost productivity, absenteeism, and presenteeism (de Oliveira et al., 2023). Untreated mental disorders incur direct costs (criminal justice, homelessness), indirect costs (unemployment, reduced workplace productivity, mortality, suicide, caregiver burden), and health care expenses (Taylor *et al.*, 2023). Additionally, chronic disease patients with mental disorders often utilize more resources and incur higher healthcare costs (Sporinova *et al.*, 2019). Globally, depression and anxiety cause an estimated 12 billion lost workdays annually, costing around US$1 trillion per year due to reduced productivity (WHO, 2024).

Based on this background, this study aims to quantitatively screen for mental disorders among Indonesians of productive age and analyze the causal factors associated with various mental health symptoms.

METHODS

Study Design

This research is a quantitative, observational study with a cross-sectional design. The study was conducted throughout Indonesia in 2023.

Population and Sample

The population and sample comprise all residents of Indonesia aged 18 years and older, totaling 2,081 participants. Sampling was conducted using accidental (convenience) sampling. Initially, students from various universities across each province provided contact information. These students then shared contacts of willing participants. Subsequently, the link to the online questionnaire was distributed, and participation was voluntary. Accidental sampling was chosen due to Indonesia's extensive geographic spread, which made online distribution practical and inclusive. This technique has been used in previous quantitative studies (Garcia et al., 2020; Le et al., 2020; Roy et al., 2020; Wang et al., 2020).

Variable and Instrument

The variables in this study include:

Response variables (Y): four symptoms of mental health disorders—depression, psychoactive/drug use, psychotic disorders, and post-traumatic stress disorder (PTSD).

Predictor variables (X): age (<17 years, 17-35 years, >35 years), gender (male, female), last education (elementary school, junior high school, senior high school/vocational school, college), occupation (unemployed/not working, student, private/honorary employee, housewife, lecturer/teacher, entrepreneur/self-employed, civil servant/army/police), and place of residence (village, city).

Data were obtained directly from participants via primary data collection using a standardized instrument, the SRQ-29. The questionnaire was distributed online via Google Forms. Participants received an explanation of the study's purpose before completing the questionnaire. Informed consent was obtained from each participant prior to participation, indicating their willingness to take part. The questionnaire comprised two sections: demographic information (age, gender, education, occupation,

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

residence) and 29 questions assessing mental health symptoms.

Criteria for Mental Disorders:

a) Psychological problems such as anxiety and depression are categorized if respondents answer "YES" to five or more questions in items 1–20.
b) Psychoactive substance/narcotics problems are categorized if there is a "YES" answer to item 21.
c) Psychotic disorder symptoms requiring serious treatment are categorized if there is at least one "YES" in items 22–24.
d) PTSD is categorized if there is at least one "YES" answer in items 25–29.

Ethical Statement

This study received ethical approval from the Health Research Ethics Committee of the Faculty of Public Health, Airlangga University (No. 162/EA/KEPK/2025).

RESULTS AND DISCUSSION

The survey results from 2,081 participants with the distribution of participants as follows:

Characteristics of Research Participants

Table 1. Characteristics of Research Participants

Variable (n=2081)	Frequency	Percentage (%)
Age Min 18 years old, Max 45 years old, Mean 20.98 years		
Gender		
Male	1654	79.5
Female	427	20.5
Education Level		
Elementary School	33	1.6
Junior High School	108	5.2
Senior High School	1676	80.5
College	264	12.7
Occupation		
Not yet/ Not working	50	2.4
Student	1251	60.1
College Student	327	17.9
Honorary/ Private Employee	212	10.2
Housewife	25	1.2
Lecturer/ Teacher	68	3.3
Entrepreneur/ Self-Employed	72	3.5
Civil Servant/Army/Police	31	1.5
Place of Resident		
Village	594	28.5
City	1487	71.5

Based on the characteristics of the participants, the average age of the sampled population was 21 years old, with women constituting the majority. The sample population was predominantly composed of respondents with high school and college education. In terms of occupation, most participants were students and college students. Additionally, the majority of respondents resided in urban areas rather than rural regions.

Table 2. Mental Health Distribution

Variable (n=2081)	Frequency	Percentage (%)
Distribution of Mental Health Symptoms		
Feeling of pain in the head	958	46.0
No appetite	613	29.5
Feeling of not well sleeping	906	43.5
Often feel afraid	997	47.9
Feel anxious, tense, or worried	1131	54.3
Hands often shake	330	15.9
Feeling digestive problems	596	28.6
Find it difficult to think clearly	1045	50.2
Not feeling happy	792	38.1
Crying very often	645	31.0
Find it difficult to enjoy daily activity	809	38.9
Feelings of difficulty in making decision	1254	60.3
Not being able to daily tasks / activities until they are neglected	661	31.8
Feelings of being unable to participate in life	801	38.5
Losing curiosity about many things	851	40.9
Not feeling valuable	740	35.6
Having thought about ending your life	349	16.8

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

Variable (n=2081)	Frequency	Percentage (%)
Always feeling tired all the time	888	42.7
Feeling unwell in your stomach	674	32.4
Getting tired easily	1234	59.3
Drinking more alcohol than usual or using drugs	22	1.1
Believing that someone wants to harm us	304	14.6
Having a burden on your minds that you never thought about before	982	47.2
Hallucinating hearing voices that you do not know for sure where they came from	549	26.4
Often dreaming about major disasters that have happened before	596	28.6
Trying not to be in a situation that reminds you of a disaster that you have experienced	447	21.5
Reduced feelings of always socializing with friends or colleagues around us	931	44.7
Feelings that are very disturbed when in a situation that reminds you of a disaster that has happened	811	39.0
Feeling troubled in express the feelings you feel	1213	58.3
Mental Health Status		
Mentally Healthy	328	15.8
Psychological symptoms (anxiety/depression)	1.272	61
Psychoactive substance/drug disorders	22	1
Symptoms of psychotic disorders	1.211	58
Symptoms of PTSD	1.593	77
Total experiencing Mental Health Disorders	1753	84.2
The number of Symptoms each individual		
1 Symptom	294	14.1
2 Symptoms	467	22.4
3 Symptoms	974	46.8
4 Symptoms	18	0.9

Based on the results of a study involving 2,081 Indonesian residents, it was found that more than half of the population experienced mental health disorders, such as difficulty in decision-making, fatigue, and challenges in understanding or expressing feelings. These issues often persisted and were accompanied by symptoms of PTSD, psychological problems (such as anxiety and depression), and psychotic disorders. Many individuals exhibited between two to three mental health symptoms simultaneously.

Bivariate Analysis

This analysis was conducted to determine the relationship between variables. Bivariate analysis was performed on two variables that were related to each other, using the chi-square statistical test at a 95% confidence interval.

Table 3. Bivariate Results of Mental Health

Variable (n=2081)	Sig.	Crude odd ratio	Confidence interval 95% of COR (Up-Low)
Age	0.007	2.206	(1.222-3.981)
Gender	0.000	1.588	(1.278-1.973)
Education Level	0.006	0.616	(0.435-0.872)
Occupation	0.126	1.233	(0.943-1.613)
Place of Residence (City)	0.834	1.021	(0.844-1.235)

Based on the results of the bivariate analysis of mental health disorders, it was found that age, gender, and education level have a significant influence on the mental health of the Indonesian population. Additionally, an analysis was conducted to determine how these

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

variables influence each specific mental health symptom, as shown in Table 4.

Table 4. Bivariate Results on 4 Symptoms of Mental Health Disorders

Variable (n=2081)	Y3 COR (95 CI%)	Y1 COR (95 CI%)	Y4 COR (95 CI%)	Y2 COR (95 CI%)
Age (ref: (<17 years and >35 years) (17-35 Years)	1.928* (1.121-3.314)	0.989 (0.985-0.994)	2.234** (1.284-3.889)	2.492** (1.439-4.316)
Gender				
(ref: Male) (Female)	2.098*** (1.687-1.593)	0.305** (0.131-0.710)	1.341** (1.083-1.661)	2.357*** (1.871-2.967)
Education Level				
(ref: High Education = Senior High School, College)	1.526* (1.030-2.262)	1.381 (0.320-5.970)	1.693** (1.170-2.451)	1.383 (0.892-2.143)
Low Education = Elementary School, Junior High School				
Occupation				
(ref. Civil Servant/ Army/ Police, HousewifeNot Yet / Not Working)	1.251 (0.949-1.649)	0.847 (0.249-2.885)	1.102 (0.843-1.441)	1.380* (1.026-1.856)
Student, College Student, Honorary /Private Employee, Self-Employed /Entrepreneur				
Place of Residence				
Village	1.083	0.855	1.141	1.050
City	(0.885-1.324)	(0.347-2.106)	(0.941-1.383)	(0.839-1.312)

Information : *Sig <0.05 ; **Sig <0.01 ; ***Sig <0.000

Predictors: (Constant), Drugs Disorder_Y1, PTSD_Y2, Anxiety / Depression_Y3, Psychotic_Y4.

Table 4 shows that the bivariate analysis of the four symptoms of mental health disorders indicates that individuals aged 17-35 years are more likely to experience anxiety, psychosis, and PTSD. Additionally, females are more susceptible to these three symptoms, except for drug-related issues. Low education levels are associated with increased symptoms of anxiety and psychosis. Regarding occupation, students, college students, honorary/private employees, and entrepreneurs/self-employed individuals are at higher risk of developing PTSD.3.

Multivariable Analysis

This analysis aims to identify which variables have the greatest influence on the dependent variable and to determine whether there are other variables that can affect the dependent variable at a 95% confidence interval (CI).

Table 5. Results of Logistic Regression of Mental Disorders

Variable (n=2081)	Sig.	Adjusted odd ratio	Up-Low (CI 95%)
Age (ref: (<17 years and >35 years) (17-35 Years)	0.027	2.123	(1.168-3.857)
Gender (ref: Male) (Female)	0.000	1.583	(1.272-1.970)
Education (ref. High Education = Senior High School, College) Low Education = Elementary School and Junior High School	0.003	1.766	(1.533-2.798)

Based on Table 5 above, it can be seen that the variables of productive age (17–35 years old), female gender, and low education are groups vulnerable to experiencing mental health symptoms. Among these variables, age is the most

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

dominant factor associated with mental disorders.

Path Analysis

To visualize the factor analysis of individual characteristic variables and each mental health symptom, refer to the following graph:

Table 6. Path Analysis Results

	X1	X2	X3	Y1	Y2	Y3	R^2	e
Y1	-0.062	x	x	x	x	x	0.004	0.998
Y2	0.075	-0.105	x	0.077	x	x	0.031	0.984
Y3	0.075	x	x	0.062	0.618	x	0.409	0.769
Y4	-0.045	x	0.046	0.040	0.355	0.310	0.368	0.795

Predictors: (Constant), Gender_X1, Age_Years_X2, Education_X3, Drugs Disorder_Y1, PTSD_Y2, Anxiety / Depression_Y3, Psychotic_Y4.

Table 6 presents the data analysis of the relationship between mental health disorders and their influencing factors. Male gender has a 0.4% higher tendency to consume drugs compared to females. However, among women, younger age and drug consumption are associated with a 3.1% increased risk of experiencing PTSD. Women who consume drugs and also experience PTSD have a 40% risk of developing anxiety or depression, while men with low education, who consume drugs and experience PTSD, have a 36% risk of developing psychosis.

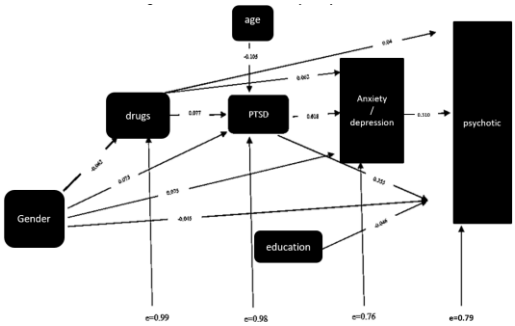

Figure 1. Mental Health Pathway Analysis Patterns

From the flow obtained through the results of the above factor analysis, it can be seen that psychosis is the endpoint of three mental health symptoms. It begins with gender, particularly females who use drugs, experiencing PTSD symptoms, which are further influenced by younger age. Individuals with PTSD are prone to anxiety and depression, which, when combined with low education (elementary and junior high school graduates), can lead to psychotic disorders. Male gender also contributes to drug use, which can increase the risk of PTSD, anxiety, and psychotic disorders.

Based on the results of this research, the majority of the Indonesian population has experienced mental health disorders. Indicators of mental health issues in the population can be observed from symptoms such as PTSD, anxiety/depression, psychosis, and drug use.

The potential for increased cases of mental health disorders can be triggered by several specific risk factors. The data show that three dominant risk factors among the Indonesian population are age, gender, and education level. In terms of age, the most vulnerable group is those in the productive age range of approximately 17–35 years, as individuals in this age group are typically economically active (Fahmi, Martini and Hargono, 2024). Economic crises, such as business closures and job losses, impact mental health and can lead to a rise in cases of suicide (Yusuf et al., 2021). Annually, around 800,000 suicides are caused by mental health disorders, such as depression, particularly among the population aged 15–29 years (Saputra, 2022).

One mental health disorder prevalent in the productive age group is schizophrenia. Schizophrenia can occur before age 18, and in children, it may begin before age 13 (Schultze-Lutter *et al.*, 2022). Over time, the challenges faced by this age group can cause deep traumatic feelings, which may eventually manifest as symptoms of mental health disorders such as PTSD. The stress of losing a job becomes a significant trauma, disturbing the psyche of the productive age group (Kirana, 2024).

In terms of gender as a risk factor, women are a vulnerable group for experiencing mental health disorders. Disorders such as anxiety, depression, and PTSD tend to be more common among women, whether they are workers or housewives (Thibaut and van Wijngaarden-Cremers, 2020). Symptoms of other mental health disorders, such as psychosis, are

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

also more prevalent in women than in men (Fresa, Rochmawati and SN, 2017). This is partly because women often carry out the majority of household chores, resulting in a lack of rest days and increased mental pressure (Apriani, Mariyanti and Safitri, 2021). Working women or single mothers are generally more vulnerable, as they disproportionately bear responsibilities at home, including childcare and eldercare (Almeida *et al.*, 2020).

Low education level is another risk factor for mental health disorders. The 2023 Indonesian Health Survey (SKI) indicated that young people with elementary and junior high school education had a higher prevalence of depression, at 2.2%, compared to high school or college graduates (Ri, 2024). The ages of 15–18 represent a transitional period of physical and mental development towards adulthood, during which issues related to personality disorders and sexual orientation require special attention. This period is vulnerable to emotional turmoil that can persist into adulthood (Helmaliah, Sari and Mahyuddin, no date). Research by (Meyrose *et al.*, 2018) also states that children of mothers with lower education levels experience more mental health problems during childhood and adolescence compared to those whose mothers have higher education. This is related to the mothers' knowledge and mental readiness in caring for their children. Factors such as emotional support, open communication, and a sense of safety significantly influence children's mental well-being (Kartikasari, Sumayni and Susanti, 2023). Furthermore, individuals with low educational attainment often face unstable economic conditions, which can lead to chronic stress, inadequate nutrition, and limited access to healthcare. These conditions can adversely affect a child's brain and emotional development (Ningsih, Lubis and Putri, 2024).

On the other hand, women who use drugs are also at risk of mental health disorders. Symptoms include addiction, neglect of daily activities, continued use despite awareness of physical and social consequences, and anxiety when attempting to stop (Hanifah, 2023). Unlike PTSD and anxiety, only a few participants in the study admitted to consuming alcohol and drugs. The substances contained in drugs can damage mental health and induce behavioral changes, such as loss of self-control (Sinjar and Sahuri, 2021). Drug use is often linked to an inability to cope with mental burdens, making it a common escape mechanism. Drug consumption can increase dopamine levels, which play a role in regulating feelings of pleasure, thereby serving as an escape from mental health issues (Nur'artavia, 2017).

Based on the analysis presented in this study, it was found that the three dominant risk factors for mental health disorders are women in the productive age group who have a low level of education and are vulnerable to psychotic mental health disorders. Women of reproductive age are particularly susceptible to mental health issues, especially during difficult times and following traumatic experiences (Mazia and Kusumawati, 2024). Hormonal influences in women can also affect mood and emotions, as women tend to prioritize emotional responses over rationality when facing problems (Ngapiyem and Kurniawan, 2020). Household problems and a lack of support from partners and family can lead to increased stress and pressure in women (Rahmani *et al.*, 2023). This situation is further exacerbated by poor coping mechanisms, which often result from low knowledge and awareness of how to manage such stressors.

Path analysis showed a higher prevalence of 0.4% in males compared to females, which can be explained by three main factors. First, hormonally, testosterone in men increases susceptibility to the rewarding effects or neurobiological responses of euphoria following the consumption of addictive substances. This hormonal effect partly explains why men tend to consume substances more frequently and develop addiction more rapidly than women (Kotov *et al.*, 2017). From a sociocultural perspective, norms around masculinity and gender expectations promote risky behaviors, including drug use, especially in contexts of high gender inequality. For example, traditional concepts of masculinity often associate resilience to stress and engagement in risky activities with "manliness." Consequently, some men use addictive substances to conform to social expectations or assert status within peer groups. Additionally, greater accessibility and lower levels of stigmatization for men make them more vulnerable to substance abuse, although

Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

this trend has begun to change in recent years (Kuhn, Swartzwelder and Wilson, 2019).

According to the path analysis table, there is a 3.1% increase in PTSD risk among younger women, indicating that the younger the age, the more vulnerable they are to substance use. This vulnerability arises from three main mechanisms. First, the prefrontal cortex in young women is still undergoing maturation; the use of addictive substances can disrupt this developmental process and lead to dysregulated stress responses (Roberts *et al.*, 2017). Second, younger women are disproportionately exposed to sociocultural stressors such as body image dissatisfaction, sexual trauma, and relational dependency, all of which heighten PTSD vulnerability and increase the likelihood of using substances as an emotional escape. Third, the accumulation of trauma in women of various age groups can cause epigenetic changes in genes regulating stress responses. The use of addictive substances can worsen neurological changes, making individuals more susceptible to PTSD (Hu *et al.*, 2022). These findings emphasize the importance of prevention and intervention strategies that consider gender and age factors. Early screening and intervention for PTSD should be prioritized in young women with a history of substance use.

Social support plays a crucial role in reducing the occurrence of mental health crises among the Indonesian population. Support in the form of empowerment—such as providing spaces for individuals to express and manage their problems—along with special attention to those exhibiting mental health disorders, is essential. A platform that offers accessible mental health services involving qualified experts capable of addressing these issues is needed. Support from the government and cooperation across various sectors are vital in efforts to improve mental health outcomes in Indonesia. The government can strengthen interventions targeting vulnerable groups, such as women at risk of psychotic disorders.

This study is an initial exploration of mental health disorder symptoms in Indonesia. Future researchers are encouraged to enlarge the sample size and utilize multistage sampling techniques to achieve better randomization. Additionally, further research could focus more deeply on psychotic disorders in women.

CONCLUSION

Mental health disorders in the Indonesian population have become a major concern for overall quality of life. Based on the screening results, many Indonesians still experience mental health issues such as anxiety, drug use, psychosis, and PTSD. Female gender is associated with all four mental health symptoms; higher education status influences symptoms of anxiety and psychosis; and individuals in the productive age range of 17–35 years are more likely to exhibit symptoms of anxiety, psychosis, and PTSD. The results of the factor analysis indicate that psychosis is the dominant symptom across all variables. It is recommended that health workers collaborate with various sectors to intervene in mild mental health symptoms as an effort to prevent the development of psychosis in the Indonesian population. The government should consider targeted interventions for vulnerable groups at risk of psychosis, such as women with low education levels within the age range of 17–35 years.

ACKNOWLEDGEMENT

We gratefully acknowledge the Health Research Student Association (HERSA), Faculty of Public Health, UIN Sumatera Utara, for serving as the enumerator team in this research. We also thank the Varians Statistik Kesehatan and Kaukus Masyarakat Peduli Kesehatan Jiwa for providing the boot camp and mentoring to improve the manuscript writing.

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Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

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Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025

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Received: 13-06-2025, Accepted: 11-07-2025, Published Online: 04-08-2025