



Revealing the Hidden Burden and Risk Factors of Mental Health Disorders

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Abstract

Mental health diseases are a major issue in Indonesia, as evidenced by mental-emotional disorders rising from 6.1% in 2018 to 9.8% in 2021, the reported prevalence of depression being that of up to 6.6%. However, even though national-level data are available, evidence from the specific region regarding the prevalence and risk factors in Bogor is still scant. Including used data This study: 2017-2018 NCD Bogor City Knowledge Risk Factor Cohort. The aims were to assess the prevalence of mental health disorders and associated factors and risk profile for each factor. 3,784 people participated. Bivariate and logistic regression analyses were used to identify risk factors. In Bogor City, the prevalence of MHD is reported at 21.4%. Multivariable analysis revealed factors associated with the outcome: below-median income (less than Rp. 3,557.146) (aOR=1.801; p=0.001), age 26-45 (aOR=1.328; p=0.001), male (aOR=1.731; p=0.001), and incomplete elementary education (aOR=1.919; p=0.006). In contrast, completion of only elementary education (aOR = 2.064; p = 0.019), heart disease (aOR = 1.773; p = 0.017), and heavy physical activity (aOR = 1.561; p = 0.001) were found to significantly influence the risk of mental health disorders (MHD) (p = 0.002). Overall, Bogor City exhibits a high prevalence of MHD, with multiple demographic and health-related risk factors contributing to this condition, including low income, age 26-45, male gender, incomplete elementary education, lack of health insurance, comorbid heart disease, and engagement in heavy physical activity.

INTRODUCTION

Mental health is an essential part of overall health. It is described as a state of well-being where an individual's emotional, psychological and cognitive capacities function optimally. A thriving mental health can help people reach their potential, face everyday strains and perform on

professional positions in societies (Rahman et al. 2025; Sarkar et al., 2024; WHO, 2017). Mental health is an vital aspect of both personal and social well-being, and should be in care in mind. Mental health has in a contemporary-day world become one of the biggest issues, with increasing pressure on everyday mundane life. Mental health issues are consistently demonstrated to

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exert a major toll on quality of life, productivity and general well-being.

While India has the maximum burden of mental illness in terms of cases (56,675,969 or 4.5% of its population) as per WHO's South-East Asia Regional Office (WHO SEARO), Maldives bears the least burden with depressive disorder being at 3.7% (12,739). Indonesia is grappling with an unprecedented mental health crisis and it shows as there was a dramatic increase in the prevalence of mental emotional disorder from 6.1% in 2018 to 9.8% by the year 2021, while depression affecting (236)6.6% (Kementerian Kesehatan RI & BKPK, 2023).

The prevalence of severe mental disorders reaches to 7 per mille in Indonesia rivalling with Bali, Yogyakarta, West Nusa Tenggara (NTB), and Aceh. The mental emotional disorders (depression and anxiety syndromes) contribute 9.8% of cases for those aged 15 years and older. These conditions are quite common, especially in Central Sulawesi, Gorontalo, East Nusa Tenggara (NTT), and Maluku (National Institute of Health Research and Development 2019). In 2022, the Indonesia-National Adolescent Mental Health Survey (I-NAMHS) reported that 1 in 3 adolescents (34.9%) or equivalent to about 15.5 million Indonesian adolescents were having mental health problems within last of 12 months; and also approximately 1 in 20 adolescents (5.5%), equals to around half millions adolescent Indonesian had one major mental disorder during this period (Wahdi et al., 2023); on a separate note, the recent result from most current numeration of the prevalence of depression throughout Indonesia, which is based on an Indonesian Health Survey data (IHS), has number recorded as only meeting for at least 1.4 percent population or statistically means more than every other hundred individual have the chance being affected by mild depression into full-blown severity Kemenkes RI BKPK, 2023). However, the results show that mental illness is an important problem in Indonesia which should be taken seriously. In order to properly response the mental health problems, more localized data are essential, especially in urban cities with different socio-demographic compositions such as Bogor City.

Several reasons make research on the prevalence of mental health disorders and their related risk factors in Bogor City interesting. First, Bogor City as a satellite city of Jakarta has been experiencing rapid urbanization and modernization that may cause an increase in psychosocial stress among residents (Basrowi et al., 2024; Frey et al., 2024; Nurdianto et al., 2023). As a big,

populated city, like traffic jams, lifestyle shifts and competition in the economic sphere that could make people have less than optimal mental health status (Mustikawati & Ernawaty, 2023). Moreover, although national data on mental health is available, epidemiological information regarding Bogor City prevalence of mental health disorders is lacking. The absence of data makes it difficult for the local administration to devise specialized mental health programs. Thirdly, knowledge of specific Bogor City risk factors will assist the mental health prioritization and manpower allocation.

Mental disorders are multifactorial in origin, with social connections being one common thread. The thing is widely acknowledged to be characterized by two types of factors: predisposing and precipitating. Such factors include biological, psychological and social aspects (Araban et al. 2026; Basrowi et al. 2024; Volkow & Blanco 2023). Early research suggests that people with a personal or family history of mental health disorders, certain types of personality and those not currently employed are more likely to experience problems with their mental health. Conversely, the etiological factors that precipitate mental health disorders encompass drug withdrawal, distressing experiences, and interpersonal conflicts with family or friends (Araban et al., 2026; Volkow & Blanco, 2023). The etiology of mental health disorders can be traced back to three primary factors: somatogenic, sociogenic, or psychogenic. The confirmation of mental health disorders is not possible through the identification of a single causative factor, as each determinant has the capacity to influence the others. This finding indicates that achieving optimal mental health is a multifaceted endeavor.

As such, many potential risk factors associated with mental health disorders have emerged in previous studies like income, age, sex, educational level/employment status (Basrowi et al., 2024), ownership of health insurance (Harahap et al., 2024) and comorbid medical diseases including heart disease and diabetes or stroke (Rajan et al., 2020). But their links with mental health disorders shall differ by population and geographical setting. Thus, the evaluation of risk factors applicable to Bogor City is needed. Mental disorders can increase the risk of suicide among affected individuals if not properly treated (Sher, 2020). Severe mental illness leads to lower productivity, which can place an economic weight on families, communities, and the government. Chronic consequences of mental disorders add indirect costs to state bodies and reduce general

productivity (de Oliveira et al., 2022; Mustikawati & Ernawaty, 2023).

One should take into account that each person's mental state is different and no definition can be applied to everyone. This perspective informs the discussion of mental health, which focuses on enabling individuals, families and communities to recognize and maintain their mental well-being in everyday life (Kamerawati et al., 2018; World Health Organization, 2013). Mental health programs in Indonesia are generally aimed at attaining the best possible psychological function for oneself, family, and for society. These initiatives take a multi-pronged approach including promotion, prevention, treatment and rehabilitation. These initiatives are carried out in a coordinated, integrated, and sustainable manner by different levels of government and community organisations (World Health Organization, 2013).

Implement mental health efforts based on the principles of justice, humanity, benefit, transparency, accountability and non-discrimination. As per literature mental health promotion interventions focus on maintaining and improving population's overall mental well-being. They aim at the public education, involvement and acceptance on mental health issues and also provide practical solutions for eliminating stigma, discrimination and human rights violations faced by persons with mental illnesses. Currently, the implementation of law No. 18/2014 on Mental Health is serving as a guide in implementing comprehensive mental health services. Establishment of essential and referral mental health services is part of a mental health initiative that can be applied with the construction of comprehensive and tiered mental health service systems (Rajan et al., 2020).

This current study used data from the 2017–2018 Cohort Study of Non-Communicable Disease Risk Factors in Bogor City and provided a unique opportunity to investigate the prevalence of mental health disorders and their associated factors among an urban Indonesian population. This study is a cross-sectional survey which intends to analyze the prevalence rate of mental health disorders in Bogor City, as well as socio-demographic determinants such as occupation, age, gender, education and income. The study also aims to determine ownership of health insurance and other comorbidities, such as heart disease, stroke and diabetes. The analysis will also look at lifestyle factors, including physical activity, smoking and alcohol consumption, in relation to mental health disorders. Lastly, the analysis

of risk for each factor identified of mental health disorders incidence in Bogor City.

The effectiveness of behavioural activation and cognitive-behavioural therapy in treating individuals with mental disorders would help to guide not only health practitioners, but also patients and the public at large. Moreover, it is also expected to become the base for developing targeted mental health programs in Bogor City.

METHOD

Data source and subjects

This study is a secondary data analysis using research data on Cohort Study of Risk Factors for Non-Communicable Diseases in Bogor City in 2017 and 2018. The study was conducted under the auspices of the Ministry of Health of the Republic of Indonesia, and is a prospective community-based cohort study.

Data Management and Analysis

This included 3,784 respondents, and the dependent variable was defined as whether or not the respondent had MHD (the Self Reporting Questionnaire (SRQ-20) was used to assess this). Inclusion criteria included (i) all cohort participants with complete data on the variables of interest and (ii) individuals aged ≥ 18 years, while exclusion criterion was restricted to duplicated records or invalid records identified during the data cleaning phase. Respondents were defined as having mental health disorders if they reported a minimum of six out of twenty symptoms in the SRQ-20 instrument. The SRQ instrument was used to evaluate mental health disorders in accordance with WHO standards that were validated for Indonesian circumstances (Parra-Mujica et al., 2023).

Lastly, the independent variables hypothesized to impact mental health disorders were age, gender, educational status, employment type, income level (in Taka/month), health insurance ownership (private and/or public), smoking status (smoker/non-smoker), alcohol consumption (no/yes), physical activity (active and inactive) and those with comorbid diseases. Age was ascertained in years at the time of data collection, while sex was dichotomized into male and female. Educational attainment was categorized by the highest level of education completed, which was classified as low education (no formal schooling to junior high school) and higher education (senior high school to university level). Employment status was categorised as a private employee/self-employed and civil servant according to the respondent's main occupation. Income level

was categorized as below or equal to/above the regional minimum wage (RMW), with the minimum RMW threshold at the time of the study defined as less than IDR 3,557,146 per month, based on reported monthly income. Health insurance ownership was coded as either having or not having health insurance. The smoking status in last one year was classified as smoker (current user) or non-smoker (never user) and alcohol consumption is defined as consumed in life time (ever user) or never consumed. Physical activity is assessed and reported in terms of MET-minutes which is a proper physical activity expressed as METs Metabolic Equivalent of Task unit for energy expenditure. Total MET-minutes/week were calculated from self-reported daily related activities and used for overall physical activity volume. Standard MET values were applied, with vigorous-intensity activities assigned 8 METs and moderate-intensity assigned 4 METs. Using the total MET value, physical activity performed in this study was classified as vigorous physical activity, with response options of yes vs no; comorbid disease status was determined by a health professional's history diagnosis for diabetes mellitus (DM), heart disease (HD), or stroke and categorized as present vs absent.

Statistical Analysis

The data were presented in frequencies and percentages based on variable categories. Bivariate analysis was used to identify risk factors associated with mental health disorders. All variables were entered into a logistic regression model using a stepwise method to determine which variables were associated ($p < 0.05$). This analysis was conducted in the absence of collinearity. The odds ratio (OR) with a 95% confidence interval (CI) was calculated as the measure of association.

Code of Ethics

This cohort data source has received ethical approval that is renewed annually from the Health Research Ethics Commission, Health Research and Development Agency, Ministry of Health of the Republic of Indonesia. The ethical clearance for the 2017 study was numbered LB.02.01/5.2/KE.108/2017, with the data use permit number IR.03.01/4/243/2022.

RESULT AND DISCUSSION

As indicated in Table 1, the majority of respondents (90.7%) had incomes below the MSE, with the largest age group being 26-45 years old (53%), and a higher percentage of women (69.5%) than men. The majority of respondents

had received a high school education (35%) and were employed (97.7%). In addition, 61.1% of the participants were insured. The rates of chronic diseases were low: The heart disease rate was 2.4% and the stroke rate was 1.3%, with diabetes mellitus at 2.7% and cancer at 0.1%. According to the survey results, there is a high prevalence of background smoking (49.2%) and alcohol consumption (17.4%). Most participants did not perform vigorous physical activity (88.7%), though 79.5% were defined as active travelers. In this study it was found that prolonged sitting time (above 6 h/day) occurred in 22.6% of respondents. The lifetime prevalence of MHD, it was recorded at 21.4%.

As illustrated in Table 2, the results of the bivariate analysis identified several risk factors associated with mental health disorders (MHD). MHD was shown to be significantly associated with the following factors $p < 0.05$: income less than minimum standard of expenditure ($p = 0.001$; OR = 2.097), female sex ($p = 0.001$; OR = 1.683) and low education level, especially primary school completed ($p = 0.006$; OR = 1.874). Furthermore, work status ($p = 0.006$; OR = 2.672), ownership of health insurance ($p = 0.031$; OR = 1.192) and heart disease presence ($p = 0.045$; OR = 1.589) and physical activity level as independent predictors of health outcomes were found to be statistically significant also according to different variables ($p \leq 0.005$, $p \leq 0.024$). MHD was not found to be significantly associated with any of the factors assessed including stroke status ($p = 0.858$), diabetes mellitus status ($p = 0.661$), smoking history ($p = 0.413$), alcohol consumption history ($p = 0.499$), travel activity ($p = 0.369$) as well as strenuous exercise (level V; $p = 0.056$) and duration of sitting time evaluated by our group.

Tables 3 reveal the outcomes of the logistic regression test, which demonstrate that a number of factors have a considerable impact on the probability of mental health disorders. The analysis revealed a noteworthy association between income and mental health outcomes, with an adjusted Odds Ratio (aOR) value of 1.801 and a p-value of 0.001, indicating that individuals with income below the median socioeconomic echelon (MSE) exhibited an 80.1% higher probability of experiencing mental health disorders compared to those with income above the MSE. The role of age in the development of mental disorders was also examined. For the 26-45 years age group, the adjusted odds ratio (aOR) was found to be 1.328 with a p-value of 0.001 which suggests that individuals in this age category were associated with an increase of 32.8% towards having mental

Table 1. Respondents Characteristics

Variable	Category	Frequency	Percent
Income	< min-wage (< Rp. 3.557.146)	3378	90.7
	≥ min-wage	347	9.3
Age group	≤ 25 y.o.	55	1.5
	26 – 45 y.o.	1973	53
	> 45 y.o.	1697	45.6
Sex	Female	2589	69.5
	Male	1136	30.5
Education level	Not in school	48	1.3
	Did not complete elementary school	443	11.9
	Elementary school graduate	887	23.8
	Junior high school graduate	812	21.8
	Senior high school graduate	1303	35
	College graduate	232	6.2
Employment status	Employed	3640	97.7
	Not employed / Retired	85	2.3
Health insurance ownership	Not Having	1448	38.9
	Having	2277	61.1
Heart disease status	Yes	90	2.4
	No	3635	97.6
Stroke status	Yes	49	1.3
	No	3676	98.7
Diabetes Mellitus Status	Yes	99	2.7
	No	3626	97.3
Smoking history	Yes	1831	49.2
	No	1894	50.8
Alcohol consumption history	Yes	650	17.4
	No	3075	82.6
Heavy physical activity	Yes	422	11.3
	No	3303	88.7
Travel activity	Yes	2960	79.5
	No	765	20.5
Strenuous Exercise	Yes	124	3.3
	No	3601	96.7
Sitting Duration (Hours/day)	Long duration > 6 jam	841	22.6
	Short duration ≤ 6 jam	2884	77.4
MHD status	Yes	799	21.4
	No	2926	78.6

Table 2. Associated Risk Factors of MHD

Variable	MHD Status				p-value	OR	95% CI	
	Yes		No				Low	Up
	n	%	n	%				
Income								
< min-wage (< Rp. 3.557.146)	757	22.4	2621	77.6	0.001	2.097	1.504	2.925
≥ min-wage	42	12.1	305	87.9		1		
Age								
≤ 25 y.o.	13	23.6	42	76.4	0.055	1.263	0.670	2.380
26 – 45 y.o.	452	22.9	1521	77.1		1.213	1.034	1.422
> 45 y.o.	334	19.7	1363	80.3		1		
Sex								
Female	620	23.9	1969	76.1	0.001	1.683	1.401	2.022
Male	179	15.8	957	84.2		1		
Education level								
Not in school	9	18.8	39	81.3	0.001	1.615	0.710	3.677
Did not complete elementary school	112	25.3	331	74.7		2.369	1.519	3.693
Elementary school graduate	232	26.2	655	73.8		2.479	1.634	3.762
Junior high school graduate	169	20.8	643	79.2		1.840	1.204	2.812
Senior high school graduate	248	19.0	1055	81.0		1.645	1.089	2.487
College graduate	29	12.5	203	87.5		1		
Employment Status								
Employed	791	21.7	2849	78.3	0.006	2.672	1.285	5.558
Not employed / Retired	8	9.4	77	90.6		1		
Health insurance ownership								
Not having	337	23.3	1111	76.7	0.031	1.192	1.016	1.397
Having	462	20.3	1815	79.7		1		
Heart disease status								
Yes	27	30.0	63	70.0	0.045	1.589	1.006	2.512
No	772	21.2	2863	78.8		1		
Stroke Status								
Yes	10	20.4	39	79.6	0.858	0.938	0.466	1.888
No	789	21.5	2887	78.5		1		
Diabetes Mellitus Status								
Yes	23	23.2	76	76.8	0.661	1.111	0.692	1.784
No	776	21.4	2850	78.6		1		
Smoking history								
Yes	403	22.0	1428	78.0	0.413	1.068	0.913	1.248
No	396	20.9	1498	79.1		1		
Alcohol consumption history								
Yes	133	20.5	517	79.5	0.499	0.931	0.755	1.147
No	666	21.7	2409	78.3		1		
Heavy physical activity								

Variable	MHD Status				p-value	OR	95% CI	
	Yes		No				Low	Up
	n	%	n	%				
Yes	109	25.8	313	74.2	0.020	1.319	1.044	1.666
No	690	20.9	2613	79.1		1		
Travel activity								
Yes	644	21.8	2316	78.2	0.369	1.094	0.899	1.332
No	155	20.3	610	79.7		1		
Strenuous Exercise								
Yes	18	14.5	106	85.5	0.056	0.613	0.370	1.017
No	781	21.7	2820	78.3		1		
Sitting Duration (Hours/day)								
Long duration > 6 jam	190	22.6	651	77.4	0.359	1.090	0.906	1.311
Short duration ≤ 6 jam	609	21.1	2275	78.9		1		

Table 3. Logistic Regression Risk Factors of MHD

Variabel	B	S.E.	Wald	df	p-value	aOR	95% CI	
							Low	Up
Income (1)	0.588	0.176	11.121	1	0.001	1.801	1.275	2.545
Age			10.531	2	0.005			
≤ 25 y.o.	0.351	0.329	1.136	1	0.286	1.421	0.745	2.709
26 – 45 y.o.	0.284	0.089	10.259	1	0.001	1.328	1.116	1.579
Sex (1)	0.549	0.101	29.754	1	0.001	1.731	1.421	2.108
Education level			19.742	5	0.001			
Not in school	0.25	0.428	0.341	1	0.560	1.284	0.555	2.972
Did not complete elementary school	0.652	0.239	7.448	1	0.006	1.919	1.202	3.066
Elementary school graduate	0.699	0.222	9.91	1	0.002	2.011	1.302	3.108
Junior high school graduate	0.401	0.224	3.217	1	0.073	1.494	0.963	2.316
Senior high school graduate	0.317	0.217	2.147	1	0.143	1.374	0.898	2.1
Health insurance ownership (1)	0.194	0.083	5.465	1	0.019	1.214	1.032	1.428
Heart disease status (1)	0.572	0.239	5.74	1	0.017	1.773	1.11	2.832
Heavy physical activity (1)	0.445	0.127	12.222	1	0.001	1.561	1.216	2.003
Constant	-3.007	0.256	137.609	1	0.001	0.049		

Notes. Model 2: Hosmer and Lemeshow test: $\chi^2 = 7.656$, $P = 0.468$, Nagelkerke $R^2 = 4.3$;

disorders compared to older age groups. Furthermore, the analysis confirmed a statistically significant difference based on sex (adjusted odds ratio [aOR] = 1.731; $p < 0.001$), showing that women were 73.1% more likely to develop mental disorders than their male counterparts.

In addition to the above, educational level was also found to be significantly associated with the change in scores, especially among those with no primary education (aOR = 1.919, $p = 0.006$)

and up to primary school education (aOR = 2.011, $p = 0.002$). This means that a secondary and primary level of education correspond to an increase in risk of 91.9% and 101.1%, respectively, compared to the group with tertiary education. Lacking health insurance was significantly linked with having a higher risk of experiencing mental health disorders, given an adjusted odds ratio (aOR) of 1.214 ($p=0.019$). This means that uninsured individuals are 21.4% more likely to devel-

op a mental health disorder than those with insurance coverage. The results also demonstrated that heart disease status (adjusted odds ratio [aOR] = 1.773, $p = 0.017$) and heavy physical activity (aOR = 1.561, $p = 0.001$) were significant effect factors, which was associated with increased risks of 77.3% and 56.1%, respectively.

The findings indicated that individuals with incomes below mid-wage level (< Rp. 3,557,146) exhibited a heightened prevalence of mental health disorders. As shown in Table 3, people with incomes below mean wage value were 80.1% more likely (adjusted odds ratio [aOR] = 1.801; $p = 0.001$) to develop mental health disorders compared with those earning above the median wage threshold. This study aligns with Mujica's research in the UK, which found that members of higher income groups are less likely to experience clinical anxiety and depression. Similarly, Adjaye-Gbewonyo et al. It was shown (2016) that mental disorders decreases due to income increases or economic improvement. Individuals with high income compared with low-income people who struggle to meet basic needs, are more prone to modulate stress comparatively and consequently report greater levels of happiness; (Adjaye-Gbewonyo et al., 2016; Guan et al., 2022; Parra-Mujica et al., 2023).

People aged 26–45 years are more likely to show symptoms of mental health illness than older people. In line with the results of the logistic regression analysis in Table 3, the earlier age group (26–45 years) was also reported to have an increased adjusted odds ratio (aOR) of 1.328 ($p=0.001$). This means that those in this

age range are 32.8% more likely to have mental health disorders than people of over the age of 45. Intra-psychological method were adopted The relationship of socioeconomic status (SES) to mental health: A study in Indonesia. Depressive symptoms study in Indonesia participants aged 35–50 years are predicted to have a lower chance of depression than age ≤ 35 years [6]. This means with increasing age, susceptibility to depressive symptoms reduces (Christl et al., 2025; James and Duarte, 2022). It is worth noting that different previous studies undertaken by Mirzaei-Alavijeh et al. (2025; van Boetzelaer et al., 2025) being consistent with the findings of this study

It is noteworthy that other research conducted by Mirzaei-Alavijeh et al. (2025; van Boetzelaer et al., 2025) aligns with the findings of this study. The early adult age group is a sizable demographic that is subject to mental disorders. In developed and developing nations, the prevalence of depression is said to be lower among older people (Mirzaei-Alavijeh et al., 2025; van Boetzelaer et al., 2025)). New research documents a worrisome trend in the mental health of working-age adults The study found that more than 10 percent of the population had symptoms suggesting they were experiencing poor mental health a number that is more than twice what it was in 2010. Approximately 15% of working-age adults around the world has a mental disorder (Teo et al., 2023; World Health Organization, 2023, 2024). Discrimination, job insecurity and work overload are just some of the poor working conditions identified in research as contributing to mental health problems among working-age

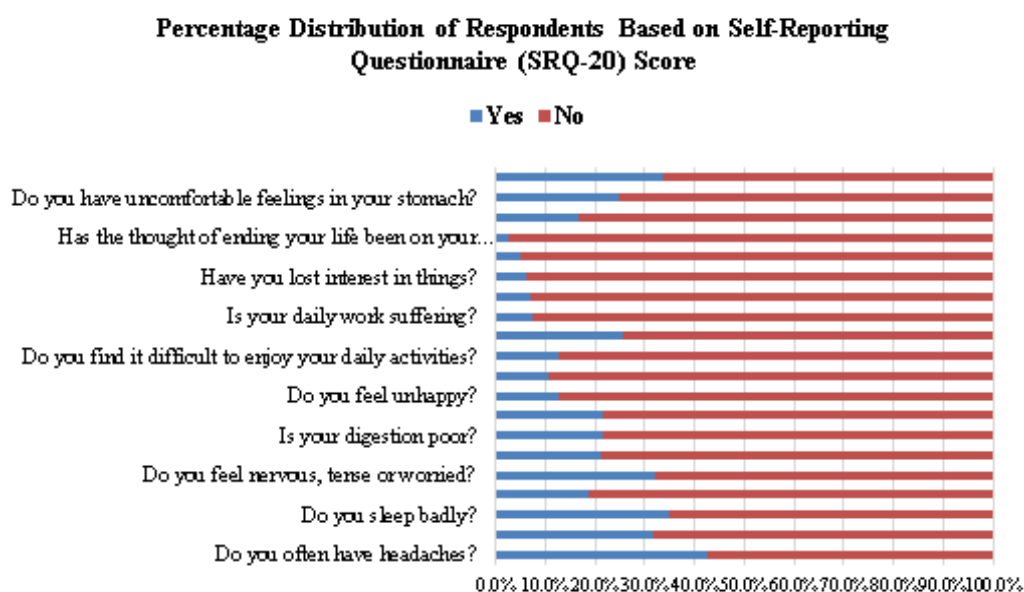


Figure 1. Percentage Distribution of Respondents Based on SRQ-20 Score

populations. Demographic variables such as age, marital status and education are also significant predictors. Other factors that contributed were adverse events and stress, including social isolation, job loss and decreased income. Last but not least, a person's physical health plays an important role since poor physical condition has been suggested to contribute towards mental health issues (Austin, 2024; Guan et al., 2022; Heinz et al., 2025; McDonnall, 2011).

As indicated in Table 3, the results of the multivariable analysis revealed that males are found to develop mental health disorders 73.1% more times than females (adjusted odds ratio [aOR] = 1.731; $p = 0.001$). This result is particularly interesting as Table 2 in the bivariate analysis reported a different pattern; specifically, being more women (23.9%) than men (15.8%) were experiencing MHD. This difference can be due to the effects of other factors considered in multivariable analysis and their adjustments. The results of this study are in line with the results from a Swedish study conducted by Yang et al. (2024), which found that males were 8.93 times more likely to manifest mental health disorders than females. The stress that comes with being the main breadwinner wears on men's mental health. In comparison, females are better at adapting under these situations which result in their risk of developing such disorder is lower (Purnawati et al., 2022; Yang et al., 2024).

Other studies, however, have shown opposing results. For example, study of Mirzaei-Alavijeh et al. Women had a higher prevalence of mental health disorders (20.56 ± 8.58) than men (17.41 ± 7.22) (2025). In a similar vein, Otten et al. (2021) for example, showed that women tend to have higher rates of internalizing disorders (e.g., depression and anxiety), men tend to have approximately twice the rates of externalizing disorders. The review also noted differences in the risk patterns of men and women, indicating that women were likely to be more greatly influenced by internal psychological factors. Combined, these findings provide further support for the evidence that the burden of mental health disorders particularly internalising conditions remains elevated among women compared to men.

The results showed that education had a significant influence on the rates of mental health disorders. Cohorts of those who did not attend elementary school (aOR = 1.919; $p = 0.006$) and those who completed the elementary school period only are more prone to have mental health dysfunction when compared to individuals with college education (aOR = 2.011; $p = 0.002$), as

shown in Table 3. The result indicates that a lower educational level may be associated with a higher risk of developing mental health disorders. This observation is consistent with Li (2022), who studied educational level and risk of mental disorders. The findings revealed that less education is associated with increased risk of mental disorders, especially in those from 28–50 years. Furthermore, numerous studies have considered low educational attainment (Atrooz et al., 2024; Li et al., 2023; Magakwe et al., 2025; Muñoz & Santos-Lozada, 2021) as a significant predictor of mental health disorders.

Low educational attainment has been linked to poor living conditions, lack of good jobs and poor housing. This phenomenon exerts a direct influence on mental health, given its propensity to engender elevated levels of stress. Prolonged or chronic stress has been demonstrated to exert an effect on hypothalamic function, with the resultant consequences including mood, anxiety, and depression (Ghasemi et al., 2024; Girotti et al., 2024; Lei et al., 2025; Morris et al., 2019; Zahedi et al., 2025).

The results of this study show a positive association between the absence of health insurance and the prevalence of mental health disorders. As presented in Table 3, lacking health insurance is associated with a higher risk of mental health disorders (aOR = 1.214; $p = 0.019$). In particular, individuals without health insurance are 21.4% more likely to get mental disorders relative to their insured counterparts. These results are in line with the findings of a United States based study carried out on health insurance status and psychological distress among adults aged 18–64 years. That study also reported that psychological distress varies according to health insurance coverage status (Ward & Martinez, 2015).

The findings indicated that the presence of heart disease significantly impacts the development of mental health disorders. The findings of the logistic regression analysis presented in Table 3 indicate that individuals afflicted with heart disease exhibit an odds ratio of 1.773 ($p = 0.017$), signifying that they demonstrate a 77.3% elevated risk of manifesting mental health disorders in comparison to individuals who are not afflicted with heart disease. As Goldfarb et al. assert (2022), people with acute or chronic heart disease face higher risks for many mental health symptoms and disorders. There are shared etiological factors between severe mental illness and cardiovascular disease which can be genetic, behavioural or biological mechanisms (Goldfarb et al., 2022).

The morbidity of patients with heart disease is commonly related to mental health disorders, and most notably depression. Individuals diagnosed with heart disease and depression have a 63% greater mortality rate compared to the general population. The higher prevalence of obesity, diabetes mellitus, hypertension and smoking in individuals with depression has been described. Sufferers of a first episode of depression have more risk factors for heart disease. In addition, recurrent depressive episodes have been associated with an increased risk of developing heart disease (Rajan et al., 2020).

Another study showed that high physical exertion was positively correlated with increased odds of mental health disorders (aOR=1.561; p=0.001). The findings of this present study imply that people who engaged in vigorous physical activity had a 56.1% higher risk of mental illness than those who practiced no vigorous physical activity. This is a curious finding, because moderate physical activity in particular appears to be protective for mental health, and vigorous physical activity might have an added stressor effect at least among populations with a background of risk factors such as low income or chronic illness.

The large sample of this study, although limited to one city in the province of West Java, which may not generalize to other regions with diverse demographic and contextual characteristics. Moreover, mental health disorder status was evaluated based on the WHO SRQ-21 instrument only. Comparison with the findings of this community-based study would require more studies using diagnoses based on specialist assessment and wider measurement of risk factors.

CONCLUSION

In conclusion, the current study shows that the prevalence of mental health disorders was 21.4% in Bogor City and several significant risk factors were identified such as income below minimum wage, age between 26 and 45 years old, male gender, education level lower than high school education background, unowned health insurance, heart disease (heart disease), and advanced physical activity status. Such factors include socioeconomic status, demographics and health characteristics that interact with each other to affect the mental health of this population. We suggest (1) the establishment of integrated mental health screening as part of primary care; (2) improving access to mental health services, particularly for less educated social groups; (3) strengthening workplace mental health programs; (4) integrating management of chronic

diseases with mental health care and (5) continuing research on protective factors in line with local cultural contexts. Contain conclusions and recommendations. Conclusions contain answers to the research questions. Recommendations refer to the results of research and practical form of action, specify to whom and for what recommendation intended. Written in essay form, not in numerical form.

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