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Muhammad Fikru Rizal[1], David W. Johnston[2], Nicole Black [2], Rohan Sweeney [2]

Abstract

In many low- and middle-income countries (LMICs), a high proportion of people with mental health needs do not receive treatment, contributing to a significant "treatment gap". Despite this, there is limited robust evidence on the socioeconomic factors that shape mental healthcare use in these settings. Using data from over 400,000 adults in Indonesia, this study examines how wealth, education, and health insurance coverage influence the likelihood of accessing mental healthcare among those with probable depression. Indonesia is an important context for this analysis because undertreatment and stigma are particularly severe. We find that only 9.3% of those identified as having probable depression receive treatment. Wealth and health insurance are positively associated with the probability of mental healthcare utilisation, while education is not. The wealth gradient diminishes at the highest income levels, and we show this is possibly due to increased stigma. These findings underscore the importance of reducing financial barriers, such as through public health insurance expansion, and reducing stigma to address the mental health treatment gap in LMICs.

Keywords: mental health, treatment gap, depression, mental healthcare

JEL Codes: I10, I14, I15, I18, D31

1. Introduction

Mental disorders are the leading cause of disability worldwide, with depression and anxiety accounting for nearly half of the global disease burden (Vos et al., 2020). In low- and middle-income countries (LMICs), limited resources exacerbate the problem, as less than 1.5% of health budgets are allocated to mental healthcare, compared to 4% in high-income countries (WHO, 2021). Additionally, mental illness stigma is more prevalent, and awareness of mental health needs is lower (Thornicroft et al., 2017). Consequently, the mental health "treatment gap" – the proportion of individuals with mental disorders who do not receive treatment – is significantly larger in LMICs. For common mental health conditions, this gap is estimated at 80-85%, compared to 52% in high-income countries (Mekonen et al., 2021).

This paper uses Indonesia as a case study to deepen our understanding of the factors contributing to the mental health treatment gap in LMICs. Indonesia provides a critical context where the effects of mental illness undertreatment and pervasive stigma are particularly severe. Human Rights Watch estimates that over 50,000 individuals with severe mental illness in Indonesia are shackled or confined by their families and communities (HRW, 2020). This situation is compounded by a shortage of mental health professionals, with only 0.45 psychiatrists per 100,000 people (WHO, 2022). This is significantly lower than the 0.99 psychiatrists per 100,000 in Vietnam, a neighbouring country with a similar income level (WHO, 2021).

The scarcity of healthcare services and the high cost of treatment may widen the treatment gap among poorer households and those without health insurance (Munira et al., 2023; Sareen et al., 2007). Additionally, limited knowledge about mental health conditions and treatment options can influence healthcare decisions, potentially leading to a greater treatment gap among lower-educated individuals (Glied & Lleras-Muney, 2008). These socioeconomic disparities in mental healthcare access are of significant policy concern, as they violate principles of fairness and horizontal equity, where individuals with similar health needs should have equal access to care (Wagstaff & van Doorslaer, 2000). Moreover, unequal access to mental healthcare may broader economic inequalities, as untreated mental health conditions can reduce individual productivity, limit labour force participation, and increase healthcare costs over time (Figueroa et al., 2020; Ridley et al., 2020).

This paper examines the socioeconomic factors influencing mental healthcare use in Indonesia, using data from the 2018 Indonesian Riskesdas survey, which includes over 400,000 adults. The analysis focuses on how wealth, education, and health insurance coverage are associated with the likelihood of accessing mental healthcare among individuals with probable depression. By accounting for the severity of mental health symptoms and physical health comorbidities, this analysis offers a detailed assessment of the barriers to mental healthcare in a low-resource setting, contributing to a literature in which most studies rely on small samples and qualitative methods, as seen in the systematic review by Roberts et al. (2018) and von Gaudecker et al. (2022).

The results show that household wealth and health insurance ownership are associated with higher mental healthcare use, while educational attainment is not. The wealth gradient in healthcare utilisation decreases among the wealthiest households, suggesting that financial barriers are less important for this group. Further analysis indicates that underreporting of mental health conditions is more common among wealthier individuals. These findings suggest that financial barriers are a key factor in the mental health treatment gap in Indonesia, but that mental health literacy and stigma may be an important barrier to utilisation amongst wealthier individuals. The implications for policy include the need to address financial impediments, potentially through expanding public health insurance, whilst also working to address mental health literacy and stigma.

2.   Mental Healthcare in Indonesia

Mental disorders are the second leading cause of disability in Indonesia, accounting for 13% of total years lived with disability (IHME, 2023; Mboi et al., 2018). Despite this, only 2% of the national health budget is allocated to mental healthcare, leading to a severe shortage of services (WHO, 2022). With only 1,200 psychiatrists and 2,800 clinical psychologists, equating to 0.45 psychiatrists and one psychologist per 100,000 people, access to mental healthcare is limited (Indonesian Association of Clinical Psychologist, 2023; WHO, 2022). Of the 514 districts in Indonesia, only 216 have psychiatric services, and just 62 employ at least one clinical psychologist in public primary care (Ministry of Health, 2019). General practitioners, often lacking advanced mental health training, handle initial diagnosis and treatment before referring patients to specialists (Indonesian Medical Council, 2012).

Significant financial barriers to accessing mental healthcare exist. Under the National Health Insurance (NHI) program, psychiatric consultations are fully covered with a referral from a general practitioner, though access to clinical psychologists often requires multiple referrals. Some people bypass referrals and pay out-of-pocket, but these costs can be substantial. In Jakarta, psychiatric consultations can cost 3-11% of the minimum monthly wage. The high cost of treatment exacerbates socioeconomic disparities, as wealthier and more educated individuals are more likely to use healthcare services, despite poorer populations facing higher health burdens (Johar et al., 2018; Mulyanto et al., 2019). However, there is limited evidence quantifying these inequities in the context of mental healthcare.

3. Data

Our main data source is the 2018 wave of Riskesdas (Riset Kesehatan Dasar), a health-specific household survey conducted by the Indonesian Ministry of Health with about 880,000 people from all 514 districts in Indonesia. In our main analysis, we restrict our sample to individuals aged 25-59 because they have mostly finished formal education, are prime working age, and unlike other age groups have a complete set of health need variables. This restriction leaves us with 417,593 individual responses.

3.1. Need for mental healthcare

To measure the mental health treatment gap, we focus on individuals with "probable depression," identified using a ten-item questionnaire adapted from the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998). Probable depression is defined as responding 'yes' to at least four questions shown in Table 1 (about 8% of the sample).[1] Common symptoms among those with probable depression include consistent feelings of depression, lack of interest, fatigue, and sleep disturbances. Notably, 8% of the group classified as having probable depression reported that they repeatedly consider hurting themselves, feel suicidal, or wish that they were dead in the past two weeks.

To account for variations in mental healthcare needs among those with probable depression, we include covariates representing the number and type of mental and physical health symptoms. These include responses to the ten-item MINI questionnaire, additional

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[1] This is based on the number of symptoms the MINI instrument uses to diagnose probable depression. The average sensitivity and specificity of this instrument to diagnose clinical depression are 95% and 84%, respectively (Pettersson et al., 2015). Robustness checks in Section 5.1 suggest the results are not sensitive to alternative cut-offs and definitions of probable depression.

psychological distress indicators from the SRQ-20 questionnaire developed by the World Health Organization, and physical health measures such as recent health complaints, self-rated poor health, and scores from each item of the WHO Disability Assessment Schedule 2.0 (WHODAS-12). These variables help us capture the complexity of mental health needs and their potential impact on the requirement for mental healthcare (Appendix Table A2 displays their sample means).

3.2.   Mental healthcare utilisation

After completing the ten-item mental health questionnaire, respondents who answered 'yes' to at least one question (30% of the sample) were asked: "For all the complaints mentioned above, did you take any medication or undergo medical treatment?" The survey guidelines specified that the medication and treatment must be received in healthcare settings or provided by a medical professional. Only 9.3% of individuals with probable depression ($\geq$4 symptoms) reported using mental healthcare services, highlighting a significant treatment gap in Indonesia. Utilisation rates were slightly lower among males (8.8%) compared to females (9.6%), and slightly higher among those with more severe symptoms: 14% of people with suicidal thoughts reported seeking treatment.

3.3.   Socioeconomic and demographic variables

Our key socioeconomic variables are household wealth, educational attainment, and health insurance ownership. Since income data is unavailable, we use a wealth index derived from principal component analysis (PCA) of household assets (Appendix Table A3), which is less prone to underreporting than other measures (McKenzie, 2005). Educational attainment is defined as the highest level of schooling completed, and health insurance ownership, including NHI, private, or employer-sponsored schemes.

Figure 1 shows that mental healthcare use among those with probable depression generally rises with wealth, though it dips in the highest wealth quintile. We also observe a higher rate among the insured. Surprisingly, women's utilisation rate is the highest among the least educated group, while the opposite is true for men. However, these associations have not fully accounted for the correlation between socioeconomic status and mental health needs (see Appendix Figure A1).

Finally, in our regression analyses, we also include other characteristics as control variables, namely age, sex, marital status, household composition, activity or occupation, urban or rural

residence, and district of residence (sample means are reported in Appendix Table A4). The average age of our respondents is 41 years, 54% are female, and 43% reside in urban areas.

4. Methods

To examine how socioeconomic status predicts mental healthcare use among those in need, we estimate Equation (1) using a linear probability model, where the outcome is a binary indicator of whether individual i reports using mental healthcare (Use_i), conditional on being classified as having probable depression:

$$\Pr(Use_i \mid Depression_i = 1) = \beta_1 SES_i + \beta_2 X_i + \beta_3 Z_i + \delta_j + \varepsilon_i \quad (1)$$

The variables of primary interest are household wealth quintile category, the highest level of completed education, and health insurance ownership (SES_i). We also include a set of sociodemographic characteristics (X_i), including age (dummy by year), sex, marital status, household composition, urban or rural residence, and occupation as control variables. District fixed-effects (δ_j) account for any place-based factors contributing to mental healthcare use that are also associated with SES_i.

The vector Z_i includes measures of mental and physical health symptoms to capture the composition and severity of the respondent's mental health needs. These include: (i) an indicator of a health complaint in the past month, (ii) an indicator of poor self-rated health, (iii) indicators for each of the ten depression symptoms, (iv) indicators for each of the 20 symptoms of psychological distress in the WHO SRQ-20, and (v) the total score and individual item score (1-5) of each of the 12 functional disability items of the WHODAS-12.

5. Results

5.1. Main results

Table 2 presents the estimated socioeconomic gradients in mental healthcare utilisation among individuals with probable depression. Overall, we find that mental healthcare use has no significant association with education, has a positive but non-linear relationship with household wealth, and has a positive association with health insurance ownership. A separate analysis by sex suggests smaller socioeconomic gradients for females. The education coefficients are not precisely estimated for either sex, but indicate that men with greater education are more likely

to use mental healthcare, while women with greater education are less likely to use mental healthcare, conditional on other included covariates.

The regression estimates by sex suggest that men from the fourth wealth quintile are 2.7 percentage points (31% relative to the outcome mean) more likely to use mental healthcare than men from the poorest quintile. However, the utilisation rate among men from the richest quintile is not statistically different from the poorest group. The estimated difference for women is smaller, with the richest group 1.9 percentage points (20% relative to the mean) more likely to use mental healthcare than the poorest. Lastly, we find that having health insurance is associated with 1.7 and 0.9 percentage points higher probability of using mental healthcare services for males and females, corresponding to 19% and 9% relative to the outcome mean, respectively.

These socioeconomic patterns are broadly consistent when using subsamples based on different measures of probable depression, including those with any of the ten symptoms of depression (broader definition) and those who indicated they had suicidal thoughts (a severe mental health need) (see Appendix Tables A5 and A6).

The concave wealth gradient is interesting because there might be other non-financial barriers that are higher among wealthier households. For example, several studies find that socioeconomic status is positively correlated with mental health stigma (Foster & O'Mealey, 2022; Nine et al., 2022; Venkatesh et al., 2015), while other studies have documented the opposite where individuals with lower socioeconomic status tend to have more external stigmatising views against mental illness (Henderson et al., 2014; Potts & Henderson, 2020).

The positive association between health insurance and mental healthcare utilisation is in line with recent causal evidence of a health insurance effect in the Netherlands (Lopes et al., 2022) and in the US (Lee & Kim, 2020). It is also consistent with the quasi-experimental evidence from Indonesia showing that health insurance coverage increases general healthcare utilisation (Erlangga et al., 2019; Sparrow et al., 2013).

5.2.   Exploring a potential mechanism

This section explores whether the observed socioeconomic gradients are driven by stigma or mental health literacy. We do so by investigating how socioeconomic status correlates with the underreporting of mental illness. The Riskesdas survey provides a rare opportunity for this analysis as household heads are asked if any household members have ever had a mental health

condition. Therefore, we can compare the response to this question with whether the household head currently exhibits severe mental health symptoms, such as probable depression or suicidal ideation (indicating that they likely do have a mental health condition) based on the MINI questionnaire. This approach, similar to Bharadwaj et al. (2017), allows us to assess whether respondents are willing and able to share their mental health status with the interviewer. Any underreporting could be due to either a lack of recognition that depression is a mental illness (literacy) or reluctance to disclose their condition (stigma).

We estimate a regression model where the outcome variable indicates that no household members have a mental illness (according to the household head's response), and focus on household heads with probable depression and those with suicidal thoughts. On average 97.6% of those with probable depression and 95.6% with suicidal thoughts reported no mental illness, suggesting a high degree of underreporting.

Table 3 reveals that wealthier individuals are significantly more likely to underreport mental health issues. For example, household heads with probable depression from the wealthiest quintile are 1.9 percentage points more likely to report that they have never had a mental illness. The underreporting of mental health issues among the wealthy could be due to stigma and sociocultural pressures related to status preservation and reputation management. In high socioeconomic groups, acknowledging mental health problems may be perceived as a vulnerability that undermines social standing and professional credibility (Nine et al., 2022; Venkatesh et al., 2015). Additionally, societal norms that associate success with self-reliance can deter help-seeking behaviour, as mental illness may be viewed as incongruent with the image of personal control and resilience (Foster & O'Mealey, 2022). Finally, there may be an implicit association of mental health issues with lower socioeconomic status, leading wealthier Indonesians to minimise or deny their mental health problems.

We cannot rule out that low mental health literacy plays a role in underreporting among the wealthiest groups. However, health literacy is positively associated with income, socioeconomic status and education in South East Asia (Rajah et al., 2019). Therefore, we would expect to see a reversed wealth gradient and a significant education gradient if health literacy were the driving factor, and yet we see neither.

The findings in Table 3 may explain why the mental healthcare utilisation rate drops at the highest wealth quintile (in Table 2). Overall, the results indicate that there may be two

counteracting forces. The first is the greater access to mental healthcare that higher wealth affords, and the second is the reduced healthcare seeking as wealth increases due to stigma-related concerns.

6. Conclusion

Evidence on the predictors of mental healthcare utilisation in LMICs remains limited despite the significant treatment gap. Using data from over 400,000 individuals from a national health survey in Indonesia, this study explores factors influencing the likelihood of individuals with mental health needs utilising mental healthcare services.

Our findings highlight several key issues. Indonesia's mental health treatment gap is substantial, with only 9.3% of people with probable depression accessing mental healthcare. This percentage aligns with utilisation rates reported for low- and middle-income countries (Mekonen et al., 2021). After controlling for needs, sociodemographic characteristics, and district fixed-effects, the analysis shows that the poorest and those without health insurance are the least likely to use mental healthcare services, indicating that financial capacity is an important factor. Interestingly, the wealth gradient in utilisation diminishes at the top quintile, possibly due to higher mental health stigma among wealthier individuals.

This study provides insights into the mental health treatment gap in Indonesia and its potential drivers, focusing on individual and household factors. Future research should examine more detailed measures of mental healthcare utilisation, including type, level, and frequency of care, and consider supply-side indicators to extend our understanding on this issue. Our findings also highlight the importance of financial barriers, including health insurance access, and mental health stigma in shaping the mental health treatment gap, which have clear policy implications for LMICs. Finally, given the two-way relationship between poverty and mental health (Ridley et al., 2020), improving access to mental health treatment should be considered as part of broader poverty alleviation efforts.

References

Bharadwaj, P., Pai, M. M., & Suziedelyte, A. (2017). Mental health stigma. *Economics Letters*, *159*, 57-60. https://doi.org/10.1016/j.econlet.2017.06.028

Erlangga, D., Ali, S., & Bloor, K. (2019). The impact of public health insurance on healthcare utilisation in Indonesia: evidence from panel data. *Int J Public Health*, *64*(4), 603-613. https://doi.org/10.1007/s00038-019-01215-2

Figueroa, J. F., Phelan, J., Orav, E. J., Patel, V., & Jha, A. K. (2020). Association of Mental Health Disorders With Health Care Spending in the Medicare Population. *JAMA Netw Open*, *3*(3), e201210. https://doi.org/10.1001/jamanetworkopen.2020.1210

Foster, S., & O'Mealey, M. (2022). Socioeconomic status and mental illness stigma: the impact of mental illness controllability attributions and personal responsibility judgments. *J Ment Health*, *31*(1), 58-65. https://doi.org/10.1080/09638237.2021.1875416

Glied, S., & Lleras-Muney, A. (2008). Technological innovation and inequality in health. *Demography*, *45*(3), 741-761. https://doi.org/10.1353/dem.0.0017

Henderson, C., Noblett, J., Parke, H., Clement, S., Caffrey, A., Gale-Grant, O., Schulze, B., Druss, B., & Thornicroft, G. (2014). Mental health-related stigma in health care and mental health-care settings. *The Lancet Psychiatry*, *1*(6), 467-482. https://doi.org/10.1016/s2215-0366(14)00023-6

HRW. (2020). *Living in chains: Shackling of people with psychosocial disabilities worldwide*.

IHME. (2023). *GBD Compare*. IHME, University of Washington. Retrieved 5/7/2023 from http://vizhub.healthdata.org/gbd-compare

Indonesian Association of Clinical Psychologist. (2023). *Number of Clinical Psychologists in Indonesia*. Retrieved 26/06/2023 from https://www.ipkindonesia.or.id/jumlah-psikolog-klinis-anggota-ipk-indonesia/

Indonesian Medical Council. (2012). *Indonesian Medical Doctor's Competency Standards (Standard Kompetensi Dokter Indonesia)*.

Johar, M., Soewondo, P., Pujisubekti, R., Satrio, H. K., & Adji, A. (2018). Inequality in access to health care, health insurance and the role of supply factors. *Soc Sci Med*, *213*, 134-145. https://doi.org/10.1016/j.socscimed.2018.07.044

Lee, J., & Kim, J. (2020). The role of health insurance in mental health care for young adults. *Applied Economics*, *52*(42), 4577-4593. https://doi.org/10.1080/00036846.2020.1738326

Lopes, F. V., Riumallo Herl, C. J., Mackenbach, J. P., & Van Ourti, T. (2022). Patient cost-sharing, mental health care and inequalities: A population-based natural experiment at the transition to adulthood. *Soc Sci Med*, *296*, 114741. https://doi.org/10.1016/j.socscimed.2022.114741

Mboi, N., Murty Surbakti, I., Trihandini, I., Elyazar, I., Houston Smith, K., Bahjuri Ali, P., Kosen, S., Flemons, K., Ray, S. E., Cao, J., Glenn, S. D., Miller-Petrie, M. K., Mooney, M. D., Ried, J. L., Nur Anggraini Ningrum, D., Idris, F., Siregar, K. N., Harimurti, P., Bernstein, R. S., . . . Hay, S. I. (2018). On the road to universal health care in Indonesia, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet*, *392*(10147), 581-591. https://doi.org/10.1016/S0140-6736(18)30595-6

McKenzie, D. J. (2005). Measuring inequality with asset indicators. *Journal of Population Economics*, *18*(2), 229-260. https://doi.org/10.1007/s00148-005-0224-7

Mekonen, T., Chan, G. C. K., Connor, J. P., Hides, L., & Leung, J. (2021). Estimating the global treatment rates for depression: A systematic review and meta-analysis. *J Affect Disord*, *295*, 1234-1242. https://doi.org/10.1016/j.jad.2021.09.038

Ministry of Health. (2019). *Health Facility Survey 2019*.

Mulyanto, J., Kringos, D. S., & Kunst, A. E. (2019). Socioeconomic inequalities in healthcare utilisation in Indonesia: a comprehensive survey-based overview. *BMJ Open*, *9*(7), e026164. https://doi.org/10.1136/bmjopen-2018-026164

Munira, L., Liamputtong, P., & Viwattanakulvanid, P. (2023). Barriers and facilitators to access mental health services among people with mental disorders in Indonesia: A qualitative study. *Belitung Nursing Journal*, *9*(2), 110-117. https://doi.org/10.33546/bnj.2521

Nine, S. B., Najm, A. F., Allan, E. B., & Gronholm, P. C. (2022). Mental health stigma among community members in Afghanistan: A cross-sectional survey. *Int J Soc Psychiatry*, *68*(7), 1470-1485. https://doi.org/10.1177/00207640211036169

Pettersson, A., Bostrom, K. B., Gustavsson, P., & Ekselius, L. (2015). Which instruments to support diagnosis of depression have sufficient accuracy? A systematic review. *Nord J Psychiatry*, *69*(7), 497-508. https://doi.org/10.3109/08039488.2015.1008568

Potts, L. C., & Henderson, C. (2020). Moderation by socioeconomic status of the relationship between familiarity with mental illness and stigma outcomes. *SSM Popul Health*, *11*, 100611. https://doi.org/10.1016/j.ssmph.2020.100611

Rajah, R., Hassali, M. A. A., & Murugiah, M. K. (2019). A systematic review of the prevalence of limited health literacy in Southeast Asian countries. *Public Health*, *167*, 8-15. https://doi.org/10.1016/j.puhe.2018.09.028

Ridley, M., Rao, G., Schilbach, F., & Patel, V. (2020). Poverty, depression, and anxiety: Causal evidence and mechanisms. *Science*, *370*(6522). https://doi.org/10.1126/science.aay0214

Roberts, T., Miguel Esponda, G., Krupchanka, D., Shidhaye, R., Patel, V., & Rathod, S. (2018). Factors associated with health service utilisation for common mental disorders: a systematic review. *BMC Psychiatry*, *18*(1), 262. https://doi.org/10.1186/s12888-018-1837-1

Sareen, J., Jagdeo, A., Cox, B. J., Clara, I., ten Have, M., Belik, S. L., de Graaf, R., & Stein, M. B. (2007). Perceived barriers to mental health service utilization in the United States, Ontario, and the Netherlands. *Psychiatr Serv*, *58*(3), 357-364. https://doi.org/10.1176/ps.2007.58.3.357

Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): The Development and Validation of a Structured Diagnostic Psychiatric Interview for DSM-IV and ICD-10. *Journal of clinical psychiatry*, *59*(20), 22-23.

Sparrow, R., Suryahadi, A., & Widyanti, W. (2013). Social health insurance for the poor: targeting and impact of Indonesia's Askeskin programme. *Soc Sci Med*, *96*, 264-271. https://doi.org/10.1016/j.socscimed.2012.09.043

Thornicroft, G., Chatterji, S., Evans-Lacko, S., Gruber, M., Sampson, N., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Andrade, L., Borges, G., Bruffaerts, R., Bunting, B., de Almeida, J. M., Florescu, S., de Girolamo, G., Gureje, O., Haro, J. M., He, Y., Hinkov, H., . . . Kessler, R. C. (2017). Undertreatment of people with major depressive disorder in 21 countries. *Br J Psychiatry*, *210*(2), 119-124. https://doi.org/10.1192/bjp.bp.116.188078

Venkatesh, B. T., Andrews, T., Mayya, S. S., Singh, M. M., & Parsekar, S. S. (2015). Perception of stigma toward mental illness in South India. *J Family Med Prim Care*, *4*(3), 449-453. https://doi.org/10.4103/2249-4863.161352

von Gaudecker, J. R., Agbapuonwu, N., Kyololo, O., Sathyaseelan, M., & Oruche, U. (2022). Barriers and facilitators to treatment seeking behaviors for depression, epilepsy, and schizophrenia in low- and middle-income countries: A systematic review. *Arch Psychiatr Nurs*, *41*, 11-19. https://doi.org/10.1016/j.apnu.2022.07.006

Vos, T., Lim, S. S., Abbafati, C., Abbas, K. M., Abbasi, M., Abbasifard, M., ..., & Bhutta, Z. A. (2020). Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet*, *396*(10258), 1204-1222. https://doi.org/10.1016/S0140-6736(20)30925-9

Wagstaff, A., & van Doorslaer, E. (2000). Chapter 34 Equity in health care finance and delivery. In (pp. 1803-1862). https://doi.org/10.1016/s1574-0064(00)80047-5

WHO. (2021). *Mental Health Atlas 2020*. World Health Organization. https://www.who.int/publications/i/item/9789240036703

WHO. (2022). *Mental Health Atlas 2020 - Indonesia Country Profile*. https://www.who.int/publications/m/item/mental-health-atlas-idn-2020-country-profile

Tables

Table 1. Percent with each mental health symptom

	All individuals	With probable depression
	(1)	(2)
For the past two weeks …		
1. Have you been consistently depressed or down, most of the day, nearly every day?	11	72
2. Have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?	8	66
3. Did you feel tired or without energy almost every day?	14	80
4. Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally?	9	60
5. Did you have trouble sleeping nearly every night?	16	75
6. Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?	5	44
7. Did you lose your self-confidence or feel worthless?	4	42
8. Did you feel guilty almost every day?	6	54
9. Did you have difficulty concentrating or making decisions almost every day?	7	57
10. Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?	1	8
Observations	417,593	32,954

Notes: This table presents the % who answer 'yes' to each question among all individuals and those with probable depression. Appendix Table A1 reports similar statistics for male and female separately.

Table 2. Socioeconomic gradients in mental healthcare utilisation, conditional on probable depression

	All (1)		Male (2)		Female (3)	
Education						
Less than primary school	Ref.					
Completed Primary School	0.001	(0.005)	0.013*	(0.008)	-0.005	(0.006)
Completed Junior High School	0.003	(0.006)	0.011	(0.009)	0.000	(0.007)
Completed Senior High School	0.004	(0.006)	0.015*	(0.009)	-0.002	(0.007)
Completed College or University	0.002	(0.009)	0.024	(0.015)	-0.011	(0.011)
Household Wealth Index						
Quintile 1 (poorest)	Ref.					
Quintile 2	0.003	(0.005)	0.003	(0.008)	0.004	(0.006)
Quintile 3	0.014**	(0.006)	0.020**	(0.009)	0.010	(0.007)
Quintile 4	0.019***	(0.006)	0.027***	(0.010)	0.016**	(0.008)
Quintile 5 (richest)	0.015**	(0.007)	0.009	(0.012)	0.019**	(0.009)
Have health insurance	0.013***	(0.004)	0.017***	(0.006)	0.009**	(0.005)
Outcome mean	0.093		0.088		0.096	
Observations	33,033		11,686		21,347	

Notes: This table presents the estimated regression coefficients of educational attainment, household wealth quintile, and health insurance ownership based on Equation (1). The outcome is a binary variable indicating that individuals use mental healthcare services related to their symptoms of depression. Control variables included in the regressions are other sociodemographic characteristics (age [dummy by year], sex, marital status, household composition, urban or rural residence, and occupation), district fixed-effects, and measures of mental and physical health symptoms. Robust standard error clustered at the district level in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Table 3. Socioeconomic gradients in mental illness underreporting

	Household head with …			
	Probable depression (1)		Suicidal ideation (2)	
Education				
Less than primary school	Ref.			
Completed Primary School	-0.003	(0.004)	-0.009	(0.029)
Completed Junior High School	0.004	(0.005)	0.019	(0.038)
Completed Senior High School	-0.000	(0.005)	0.012	(0.040)
Completed College or University	-0.006	(0.009)	-0.040	(0.074)
Household Wealth Index				
Quintile 1 (poorest)	Ref.			
Quintile 2	0.005	(0.005)	0.012	(0.028)
Quintile 3	0.009*	(0.005)	0.019	(0.036)
Quintile 4	0.016***	(0.006)	0.029	(0.034)
Quintile 5 (richest)	0.019***	(0.007)	0.057	(0.041)
Have health insurance	-0.006*	(0.003)	0.008	(0.024)
Outcome mean	0.976		0.956	
Observations	12,001		1,040	

Notes: This table presents the estimated regression coefficients of educational attainment, household wealth quintile, and health insurance ownership. Results in Columns 1 and 2 are estimated from sample of household head aged 25 to 59 who have "probable depression" (reporting ≥4 symptoms of depression) and have suicidal ideation – defined as answering 'yes' to question "Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?", respectively. The outcome is a binary variable that no one in the household has mental disorders. Control variables included in the regressions are other sociodemographic characteristics (age [dummy by year], sex, marital status, household composition, urban or rural residence, and occupation), district fixed-effects, and measures of mental and physical health symptoms of household heads. Robust standard error clustered at the district level in parentheses. * $p<0.1$ ** $p<0.05$ *** $p<0.01$

Figure

Figure 1. Mental healthcare utilisation by socioeconomic status, conditional on probable depression
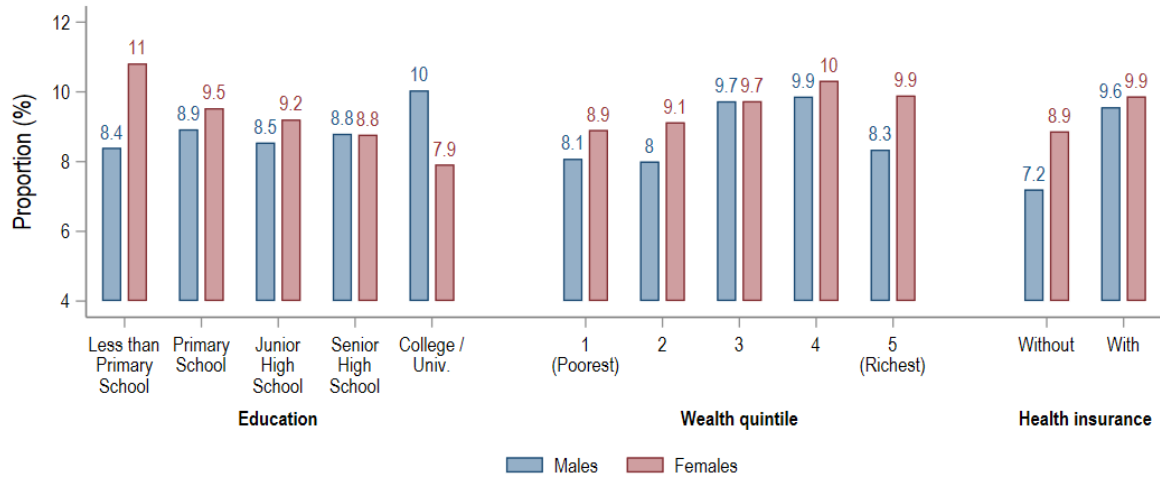
Note: This figure shows the proportion of individuals who use mental healthcare services by educational attainment, wealth quintile, and health insurance ownership, separately for males and females. Sample is restricted to individuals aged 25-59 with probable depression from Riskesdas (N=11,686 males and 21,347 females).

Appendix

Figure A1. Prevalence of probable depression by socioeconomic status
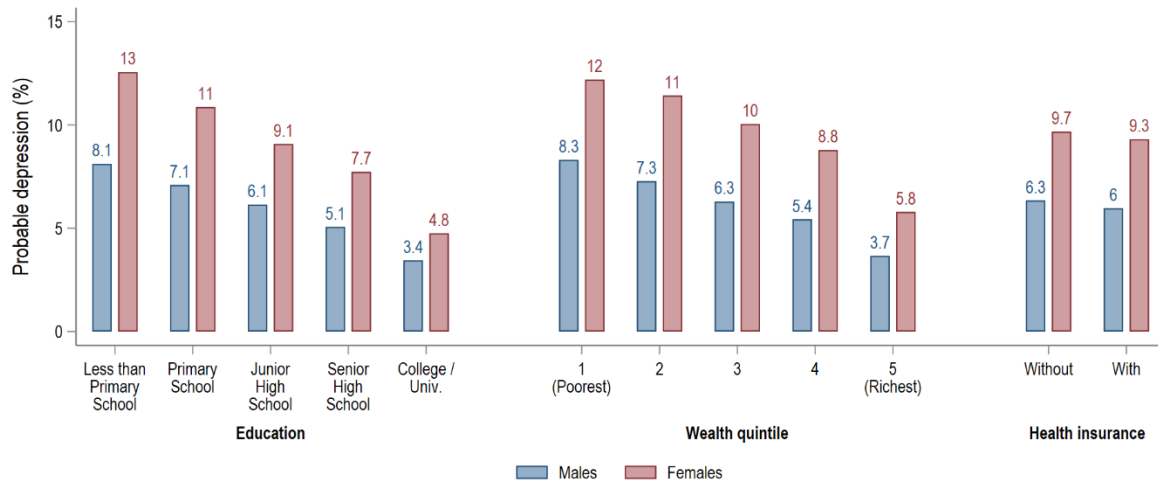
Note: This figure plots the proportion of individuals with probable depression (having at least four symptoms on the modified MINI questionnaire) by educational attainment, household wealth quintile, and health insurance ownership, separately for males and females. Sample is individuals aged 25-59.

Table A1. Percent with each mental health symptom by gender

	All individuals		With probable depression	
	Male	Female	Male	Female
	(1)	(2)	(3)	(4)
For the past two weeks …				
1. Have you been consistently depressed or down, most of the day, nearly every day?	8	13	66	75
2. Have you been much less interested in most things or much less able to enjoy the things you used to enjoy most of the time?	7	10	65	66
3. Did you feel tired or without energy almost every day?	11	16	77	82
4. Was your appetite decreased or increased nearly every day? Did your weight decrease or increase without trying intentionally?	7	10	57	62
5. Did you have trouble sleeping nearly every night (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?	13	17	73	76
6. Did you talk or move more slowly than normal or were you fidgety, restless or having trouble sitting still almost every day?	4	5	44	43
7. Did you lose your self-confidence or feel worthless?	4	5	46	40
8. Did you feel guilty almost every day?	6	7	57	52
9. Did you have difficulty concentrating or making decisions almost every day?	6	7	61	55
10. Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?	1	1	8	8
Observations	191,522	226,071	11,686	21,347

This table presents the % who answer 'yes' to each question among all individuals (Columns 1 and 2) and those with probable depression (Columns 3 and 4) separately by male and female.

Table A2. Sample mean of health symptoms variables

	All Individuals			With "probable depression"		
	All (1)	Male (2)	Female (3)	All (4)	Male (5)	Female (6)
Panel A. General health						
Poor self-reported health	0.026	0.022	0.029	0.149	0.155	0.146
Have health complaints	0.305	0.282	0.324	0.398	0.362	0.419
Panel B. Psychological distress (binary) – Q: In the last 30 days, do you ...?						
1. Often have headache	0.371	0.312	0.421	0.703	0.634	0.741
2. Poor appetite	0.149	0.122	0.172	0.572	0.527	0.596
3. Sleep badly	0.217	0.194	0.236	0.714	0.693	0.725
4. Easily frightened	0.063	0.038	0.084	0.352	0.281	0.391
5. Nervous, tense, or worried	0.115	0.083	0.142	0.586	0.541	0.611
6. Hands are shaking / trembling	0.076	0.065	0.085	0.324	0.330	0.321
7. Poor digestion	0.076	0.065	0.085	0.322	0.319	0.323
8. Trouble thinking clearly	0.052	0.046	0.057	0.385	0.406	0.374
9. Feeling unhappy	0.052	0.042	0.060	0.389	0.383	0.392
10. Cry more than usual	0.039	0.015	0.059	0.304	0.154	0.386
11. Difficult to enjoy activities	0.049	0.042	0.054	0.381	0.396	0.373
12. Difficult to make decisions	0.057	0.052	0.061	0.396	0.426	0.380
13. Daily work is suffering	0.040	0.036	0.043	0.302	0.333	0.284
14. Unable to play a useful part in life	0.022	0.021	0.024	0.187	0.212	0.173
15. Lost interest in things	0.035	0.030	0.039	0.298	0.312	0.290
16. Feeling worthless	0.029	0.025	0.033	0.254	0.265	0.248
17. Suicidal thought	0.008	0.006	0.010	0.067	0.060	0.070
18. Tired all the time	0.096	0.077	0.112	0.524	0.499	0.537
19. Uncomfortable stomach	0.109	0.091	0.125	0.438	0.421	0.447
20. Easily tired	0.186	0.148	0.219	0.685	0.646	0.707
Total SRQ-20 Score	1.841	1.51	2.121	8.183	7.838	8.369
Panel C. Disability (scale of 1-5) – Q: In the last 30 days, how much difficulty did you have in ...						
1. Standing for long periods, such as 30 minutes?	1.337	1.276	1.389	1.840	1.774	1.877
2. Walking a long distance, such as a kilometre (or equivalent)?	1.406	1.307	1.489	1.953	1.820	2.025
3. Concentrating on doing something for ten minutes?	1.265	1.239	1.286	1.724	1.747	1.711
4. Learning a new task, for example, learning how to get to a new place?	1.301	1.266	1.330	1.805	1.819	1.797
5. Taking care of your household responsibilities?	1.267	1.246	1.286	1.743	1.784	1.720
6. Your day-to-day work/school?	1.184	1.173	1.192	1.506	1.552	1.481
7. Washing your whole body?	1.103	1.099	1.105	1.217	1.238	1.205
8. Getting dressed?	1.092	1.090	1.094	1.183	1.202	1.172
9. Dealing with people you do not know?	1.177	1.166	1.187	1.423	1.452	1.408
10. Maintaining a friendship?	1.152	1.144	1.159	1.337	1.366	1.321
11. How much of a problem did you have in joining in community activities?	1.253	1.232	1.271	1.624	1.645	1.613
12. How much have you been emotionally affected by your health condition?	1.319	1.285	1.347	1.928	1.923	1.932
Total WHODAS Score	14.855	14.523	15.136	19.282	19.321	19.261
Observations	418,514	191,953	226,561	33,033	11,686	21,347

Notes: Disability questionnaire is adopted from the 12-item, self-administered WHO Disability Assessment Schedule (WHODAS-12). Scale 1-5 refers to none, mild, moderate, severe, and extreme or cannot do. Phsychological distress questionnaire is adopted from the 20-item WHO self-reported questionnaire (SRQ-20).

Table A3. Sample means of select household asset variables

	Q1 (Poorest)	Q2	Q3	Q4	Q5 (Richest)	All households
Floor area (m²)	46.07	60.75	71.08	82.58	126.12	77.32
Number of bedrooms	1.62	2.03	2.31	2.59	3.14	2.34
Assets ownership (%)						
LPG	0.6	2.0	4.4	6.7	37.2	10.2
Refrigerator	6.1	31.4	51.4	78.3	97.1	52.8
Air conditioner	0.0	0.1	0.5	2.0	30.3	6.6
Water heater	0.1	0.3	0.6	0.9	7.1	1.8
Fixed line telephone	0.0	0.0	0.1	0.4	8.6	1.8
Computer/laptop	1.0	4.0	9.7	16.2	60.7	18.3
Jewellery	2.0	5.3	10.1	15.8	54.0	17.4
Motorbike	38.5	67.1	78.2	88.6	94.8	73.4
Boat	6.3	3.0	1.9	1.1	0.7	2.6
Motorboat	4.6	2.5	1.6	1.1	0.9	2.2
Car	0.2	1.0	2.7	5.7	42.7	10.5
Flat-screen TV	0.7	2.2	5.1	9.6	43.3	12.2
Land	67.6	70.3	71.8	77.4	88.0	75.0
Observations	54,670	54,669	54,670	54,668	54,669	273,346

Note: This table report sample mean of select household assets. Other assets that are recorded categorically (type of dwelling, type of roof, wall, and floor, ownership of latrine, type of electricity access, and type of main cooking fuel) are not presented.

Table A4. Sample means of individual-level characteristics

	All Individuals			With "probable depression"		
	All	Male	Female	All	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Socioeconomic status						
Education						
Less than primary school	0.173	0.156	0.187	0.235	0.208	0.250
Completed Primary School	0.268	0.253	0.281	0.314	0.295	0.324
Completed Junior High School	0.183	0.186	0.180	0.179	0.187	0.174
Completed Senior High School	0.267	0.301	0.238	0.215	0.251	0.195
Completed College or University	0.109	0.104	0.114	0.058	0.059	0.057
Household Wealth Index						
Quintile 1 (poorest)	0.173	0.178	0.169	0.227	0.242	0.219
Quintile 2	0.190	0.192	0.187	0.228	0.230	0.227
Quintile 3	0.200	0.201	0.199	0.211	0.208	0.212
Quintile 4	0.214	0.213	0.216	0.197	0.190	0.201
Quintile 5 (richest)	0.223	0.216	0.229	0.137	0.130	0.141
Have health insurance	0.689	0.682	0.695	0.680	0.669	0.686
Panel B. Other sociodemographic characteristics						
Female	0.541			0.646		
Age (years)	41.298	41.563	41.074	42.130	41.763	42.330
Reside in urban areas	0.431	0.426	0.435	0.418	0.405	0.425
Marital status						
Married	0.864	0.857	0.871	0.814	0.792	0.826
Never married	0.073	0.111	0.040	0.076	0.143	0.039
Divorced or widowed	0.063	0.032	0.089	0.110	0.065	0.135
Household composition						
Living alone	0.017	0.018	0.016	0.027	0.032	0.024
Number of children (< 18)	1.250	1.236	1.262	1.253	1.226	1.268
Number of other adults (≥ 18)	1.503	1.589	1.431	1.423	1.523	1.368
Occupation/activity						
Not working for pay	0.252	0.038	0.433	0.336	0.087	0.472
Employee	0.142	0.183	0.108	0.079	0.115	0.059
Self-employed	0.164	0.210	0.124	0.136	0.174	0.115
Farmer/fisher	0.283	0.373	0.206	0.289	0.414	0.221
Labourer or other	0.159	0.196	0.129	0.160	0.210	0.132
Observations	418,514	191,953	226,561	33,033	11,686	21,347

Notes: This table reports the sample mean of key socioeconomic variables (Panel A) and other sociodemographic characteristics (Panel B), for all individuals (Columns 1-3) and for those with probable depression (Columns 4-6). The sample is restricted to individuals aged 25 to 59 with valid information on mental health module.

Table A5. Socioeconomic gradients in mental healthcare utilisation, conditional on alternative classifications of mental health needs

	Classification of mental health needs					
	Any symptoms of depression		Probable depression (main)		Suicidal ideation	
	(1)		(2)		(3)	
Education						
Less than primary school	Ref.					
Completed Primary School	0.003	(0.002)	0.001	(0.005)	0.021	(0.021)
Completed Junior High School	0.002	(0.002)	0.003	(0.006)	0.045*	(0.025)
Completed Senior High School	0.002	(0.002)	0.004	(0.006)	0.019	(0.026)
Completed College or University	0.005	(0.003)	0.002	(0.009)	0.017	(0.044)
Household Wealth Index						
Quintile 1 (poorest)	Ref.					
Quintile 2	0.003	(0.002)	0.003	(0.005)	0.004	(0.022)
Quintile 3	0.007***	(0.003)	0.014**	(0.006)	0.049*	(0.028)
Quintile 4	0.006**	(0.002)	0.019***	(0.006)	0.073**	(0.028)
Quintile 5 (richest)	0.008***	(0.003)	0.015**	(0.007)	0.030	(0.036)
Have health insurance	0.005***	(0.002)	0.013***	(0.004)	0.013	(0.017)
Outcome mean	0.057		0.093		0.142	
Observations	124,301		33,033		2,906	

Notes: This table presents the estimated socioeconomic gradients of mental healthcare utilisation from Equation (1) across different classification of mental health need for all individuals. Results in Column 1 are based on the sample of individuals who have at least one symptom from the 10-item depression questionnaire. Results in Column 2 are based on our main definition of probable depression (having ≥4 symptoms). Results in Column 3 are based on the sample of individuals who answer 'yes' to question "Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?" The outcome is a binary variable indicating that individuals use mental healthcare services. Robust standard error clustered at the district level in parentheses. * p<0.1 ** p<0.05 *** p<0.01

Table A6. Socioeconomic gradients in mental healthcare utilisation, conditional on alternative classifications of mental health needs, by gender

	Classification of mental health needs					
	Any symptoms of depression		Probable depression (main)		Suicidal ideation	
	(1)		(2)		(3)	
Panel A. Males						
Education						
Less than primary school	Ref.					
Completed Primary School	0.003	(0.003)	0.013*	(0.008)	-0.014	(0.051)
Completed Junior High School	0.000	(0.003)	0.011	(0.009)	0.040	(0.063)
Completed Senior High School	0.002	(0.003)	0.015*	(0.009)	-0.022	(0.057)
Completed College or University	0.006	(0.005)	0.024	(0.015)	-0.011	(0.102)
Household Wealth Index						
Quintile 1 (poorest)	Ref.					
Quintile 2	-0.001	(0.003)	0.003	(0.008)	0.016	(0.044)
Quintile 3	0.007*	(0.004)	0.020**	(0.009)	0.061	(0.054)
Quintile 4	0.007*	(0.004)	0.027***	(0.010)	0.096	(0.065)
Quintile 5 (richest)	0.010**	(0.004)	0.009	(0.012)	0.046	(0.072)
Have health insurance	0.006**	(0.003)	0.017***	(0.006)	0.046	(0.039)
Outcome mean	0.051		0.088		0.151	
Observations	49,799		11,686		1,056	
Panel B. Females						
Education						
Less than primary school	Ref.					
Completed Primary School	0.003	(0.003)	-0.005	(0.006)	0.020	(0.032)
Completed Junior High School	0.004	(0.003)	0.000	(0.007)	0.032	(0.037)
Completed Senior High School	0.001	(0.003)	-0.002	(0.007)	0.017	(0.041)
Completed College or University	0.003	(0.004)	-0.011	(0.011)	-0.020	(0.067)
Household Wealth Index						
Quintile 1 (poorest)	Ref.					
Quintile 2	0.005*	(0.003)	0.004	(0.006)	-0.006	(0.033)
Quintile 3	0.007**	(0.003)	0.010	(0.007)	0.046	(0.039)
Quintile 4	0.006*	(0.003)	0.016**	(0.008)	0.061	(0.040)
Quintile 5 (richest)	0.007**	(0.004)	0.019**	(0.009)	0.035	(0.048)
Have health insurance	0.004	(0.002)	0.009**	(0.005)	0.007	(0.026)
Outcome man	0.061		0.096		0.138	
Observations	74,502		21,347		1,850	

Notes: This table presents the estimated socioeconomic gradients of mental healthcare utilisation from Equation (1) across different classification of mental health needs, separately for males (Panel A) and females (Panel B). Results in Column 1 are based on the sample of individuals who have at least one symptom from the 10-item depression questionnaire. Results in Column 2 are based on our main definition of probable depression (having ≥ 4 symptoms). Results in Column 3 are based on the sample of individuals who answer 'yes' to question "Did you repeatedly consider hurting yourself, feel suicidal, or wish that you were dead?" The outcome is a binary variable indicating that individuals use mental healthcare services. Robust standard error clustered at the district level in parentheses. * p<0.1 ** p<0.05 *** p<0.01