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The relationship between functional status and mental–emotional health among adults aged 40 years and older

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Abstract

Background: Mental–emotional problems frequently remain undetected among middle-aged and older adults. Declining functional status associated with aging contributes to increased mental-emotional symptoms.

Purpose: To examine the relationship between functional status and mental–emotional symptoms among adults aged 40 years and older.

Method: This cross-sectional study involved 128 adults aged 40 years and older in Samarinda, Indonesia. Functional status was assessed using the Barthel Index (BI) and mental-emotional health using the Self-Reporting Questionnaire-20 (SRQ-20). Analyses included Fisher Exact test, Mann-Whitney U test, and Spearman correlation.

Results: Participants, 19.5% had functional dependency and 22.7% screened positive for MED. The median SRQ score in the dependent group (5.0) was significantly higher than the independent group (2.0; $p=0.001$). A significant negative correlation was found between BI and SRQ scores ($r=-0.322$; $p=0.0002$). OR for MED in the dependent group was 2.334 (95% CI: 0.901–6.045).

Conclusion: Poorer functional status was associated with a greater burden of mental–emotional symptoms. However, the categorical association between dependency and positive screening was not statistically significant. Integrated functional and mental-health screening may be useful in primary care for middle-aged and older adults.

Keywords: Barthel Index; Functional Status; Mental–Emotional Symptoms; Older Adults; SRQ-20.

INTRODUCTION

The rapid growth of the elderly population is a global phenomenon that Indonesia is also experiencing. According to Indonesia's Population Projection 2020–2050, the proportion of the population aged ≥ 60 years is projected to reach 11.75% by 2025 and 19.9% by 2045, making Indonesia one of the fastest-aging countries in Southeast Asia. In East Kalimantan, a similar trend is occurring, with life expectancy in the province reaching 75.28 years in 2025 the seventh highest nationally and specifically 75.89 years in Samarinda (Statistics Kalimantan Timur Province, 2026). In Samarinda, the proportion of the population aged ≥ 60 years reached 8.28% in 2024 (Directorate of Population and Labor Statistics, 2023). With

projections indicating this figure will continue to rise significantly through 2035 (Statistics Indonesia – Samarinda Municipality, 2024). The normal aging process is characterized by progressive physical functional decline, including diminished capacity to perform Activities of Daily Living (ADL). A global meta-analysis reported that the prevalence of functional disability among community-dwelling older adults ranges from 15–40%, depending on the sociodemographic context and measurement instruments used (Amlak, Getinet, Getie, Kebede, Tarekegn, & Belay, 2025). Functional decline not only affects physical independence, but also substantially impacts quality of life, self-esteem, and psychological well-being (Ministry of Health of the Republic of

Indonesia, 2019). Loss of independence may trigger helplessness, dependence on others, and reduced social participation, all of which may increase vulnerability to mental–emotional problems (World Health Organization, 2025).

Mental-emotional disorder (MED) in the elderly is a serious public health problem that frequently goes undetected and untreated. Evidence from the Global Burden of Disease Study 2019 confirms that depressive disorders rank among the leading causes of disability-adjusted life years (DALYs) globally, exceeding the burden of many chronic physical diseases (GBD 2019 Mental Disorders Collaborators, 2022). A recent meta-analysis covering 98 studies worldwide reported a global prevalence of depression in older adults of 27.5%, with functional limitations as one of the strongest predictors (Jalali, Ziapour, Karimi, Rezaei, Emami, Kalhori, & Kazemina, 2024). In Indonesia, the 2018 National Health Survey recorded a MED prevalence of 9.8% among the population aged ≥ 15 years, with the elderly showing higher figures particularly those with chronic diseases and functional limitations (Ministry of Health of the Republic of Indonesia, 2019). Notably, East Kalimantan recorded the second highest provincial depression prevalence nationally at 2.2%, surpassed only by West Java (3.3%), underscoring the elevated mental health burden in this region (Ministry of Health of the Republic of Indonesia, 2024). The Lancet Commission on Global Mental Health and Sustainable Development affirmed that mental health is inseparable from overall health and development, calling for the integration of mental health services into primary healthcare systems worldwide (Patel, Royall, Gaisford, Williams, Edwards, Warren, & Butterworth, 2017). The relationship between physical functional decline and mental health has been documented across diverse research settings, including in developing countries. Using data from the 2018 Indonesian National Health Survey, found that elderly individuals with severe functional dependency had a 5.73 times higher risk of depression (95% CI: 4.302–7.632) compared to independent elderly (Idaiani & Indrawati, 2021). Using CHARLS data involving more than 10,000 respondents in China confirmed that both basic ADL (BADL) and instrumental ADL (IADL) disabilities were significantly associated with depressive symptoms in older adults (Liu, Ma, Lin, Sun, Li, & Jiang, 2023). A strong

negative relationship between functional capacity and both quality of life and emotional well-being among elderly Nigerians (Akosile, Mgbejedo, Maruf, Okoye, Umeonwuka, & Ogunniyi, 2018). These findings suggest that the psychosocial and neurobiological mechanisms linking functional dependency to mental disorders are universal across cultures and geographies.

In Indonesia, the Self-Reporting Questionnaire-20 (SRQ-20) developed by the WHO has been validated and recommended by the Ministry of Health as a community-level MED screening tool in primary care settings. The SRQ-20 has been validated in the Indonesian context, demonstrating good internal consistency (Cronbach's $\alpha = 0.82$) and a five-factor structure encompassing energy, cognitive, depression, physiological, and anxiety dimensions (Prasetio, Triwahyuni, & Prathama, 2022). The Barthel Index (BI) has been the most widely used international standard for assessing functional status in geriatric community settings since its introduction. Despite the growing evidence base globally, data from community settings in Kalimantan remain scarce.

RESEARCH METHOD

This study employed an observational-analytic design with a cross-sectional approach. Data were collected across multiple neighborhoods within Samarinda City, East Kalimantan Province, Indonesia. Respondents were recruited by epidemiology students of the Faculty of Public Health, Mulawarman University in October 2025 as part of a course-based screening assignment, in which each student administered the questionnaire to family members or nearby residents in their respective place of residence, using a structured digital questionnaire through KoboToolbox in face-to-face interviews. Informed consent was obtained from all respondents prior to data collection. The target population consisted of pre-elderly and elderly individuals aged ≥ 40 years residing in the study area who were willing to participate. A total of 128 respondents were enrolled. Respondents were recruited using a convenience sampling technique, whereby students screened family members, neighbors, or nearby community residents who met the inclusion criteria and were available and willing to participate. Functional status was assessed using the Barthel Index (BI), comprising 10 items evaluating the ability

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The relationship between functional status and mental–emotional health among adults aged 40 years and older

to control bowel and bladder, personal hygiene, toilet use, feeding, transfer, mobility, dressing, stair climbing, and bathing — with a total score ranging from 0 to 20. A score of 20 was classified as Independent and a score <20 as Dependent, consistent with the widely used geriatric classification (Mahoney & Barthel, 1956) and also been used in geriatric screening. This instrument has also been adapted as the ADL (Activity Daily Living) screening tool used for elderly geriatric health screening in Indonesia.

Mental-emotional health was assessed using the SRQ-20, a WHO instrument. The Indonesian version of the SRQ-20 has been validated by Prasetio et al. (2022), showing good internal consistency (Cronbach's $\alpha = 0.82$). A cut-off score of ≥ 6 was used to define positive MED screening, in accordance with the Ministry of Health of Indonesia's recommendation for community-based geriatric screening, as also

implemented in Satu Sehat application. Each 'Yes' response is scored as 1, yielding a total score of 0–20. A cut-off score of ≥ 6 was used to define positive MED screening, as recommended by the Ministry of Health Indonesia in geriatric screening. Additional variables collected included sex, age group, educational level, marital status, and smoking status. Data analysis was performed using STATA 17. Univariate analysis described the frequency distribution of all variables. Bivariate analysis employed such as Fisher Exact test for categorical association, with Odds Ratio (OR) and 95% Confidence Interval (CI) as measures of association. Mann-Whitney U test to compare SRQ-20 score distributions between the two functional groups and Spearman correlation to assess the strength and direction of the relationship between BI and SRQ-20 scores as continuous variables. Statistical significance was set at $p < 0.05$.

RESEARCH RESULTS

Table 1. Characteristics of Respondents (N=128)

Variable	Results	OR	95% CI	p-value*
Age (n/%) (Mean$\pm$SD)(Range)(Year)	(54.2 $\pm$ 10.4)(40-70)			
40-49	41/32.0			
50-59	45/35.2			
≥ 60	42/32.8			
Functional Status (Barthel Index) (n/%) (Mean$\pm$SD)	19.4 $\pm$ 2.0	2.334	0.901–6.045	0.108
Independent (Score = 20)	103/80.5			
Dependent (Score < 20)	25/19.5			
Mental-Emotional Health (SRQ-20) (n/%) (Mean$\pm$SD)	3.8 $\pm$ 3.7			
Negative (Score < 6)	99/77.3			
Positive (Score ≥ 6)	29/22.7			
Gender (n/%)				
Female	70/54.7			
Male	58/45.3			
Education (n/%)				
Not in School	9/7.0			
Elementary School	29/22.7			
Junior High School	18/14.1			
Senior High School	37/28.9			

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University	35/27.3
Marital Status (n/%)	
Married	102/79.7
Divorced/Separated/Single	26/20.3
Smoking Status (n/%)	
Non-Smoker	95/74.2
Smoker	33/25.8

The mean age of the participants was 54.2 ± 10.4 years (range: 40–70 years), with the largest age group being 50–59 years (45 participants; 35.2%). Most participants were functionally independent based on the Barthel Index (103; 80.5%) and had negative mental-emotional health status according to the SRQ-20 (99; 77.3%). The majority of participants were female (70; 54.7%), had completed senior high school (37; 28.9%), were married (102; 79.7%), and were non-smokers (95; 74.2%). The mean Barthel Index score was 19.4 ± 2.0 , while the mean SRQ-20 score was 3.8 ± 3.7 . The odds ratio for functional status was 2.334 (95% CI: 0.901–6.045), although the association was not statistically significant ($p = 0.108$).

Table 2. Comparison of SRQ-20 Scores by Functional Status

Group	n	Median SRQ-20	Mean $\pm$ SD	p**
Independent (BI=20)	103	2.0	3.32 ± 3.62	0.001
Dependent (BI<20)	25	5.0	5.52 ± 3.32	

Spearman Correlation: $r = -0.322$; $p = 0.0002$

**Mann-Whitney U test

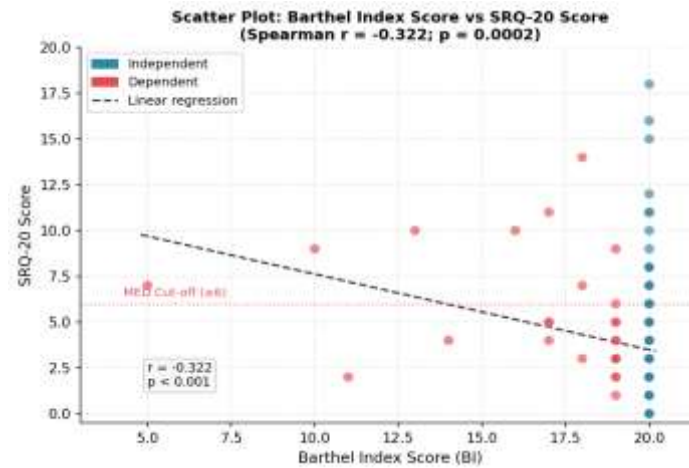
Table 2 shows the comparison of SRQ-20 scores between respondents with independent and dependent functional status. Respondents who were independent (Barthel Index = 20) had a median SRQ-20 score of 2.0 and a mean score of 3.32 ± 3.62 , whereas those who were dependent (Barthel Index <20) had a higher median score of 5.0 and a mean score of 5.52 ± 3.32 . The difference in SRQ-20 scores between the two groups was statistically significant ($p = 0.001$), indicating that respondents with functional dependence experienced significantly poorer mental-emotional health than those who were functionally independent. Furthermore, Spearman's correlation analysis demonstrated a significant negative correlation between functional status and SRQ-20 scores ($r = -0.322$; $p = 0.0002$), suggesting that better functional status was associated with fewer mental-emotional health problems.

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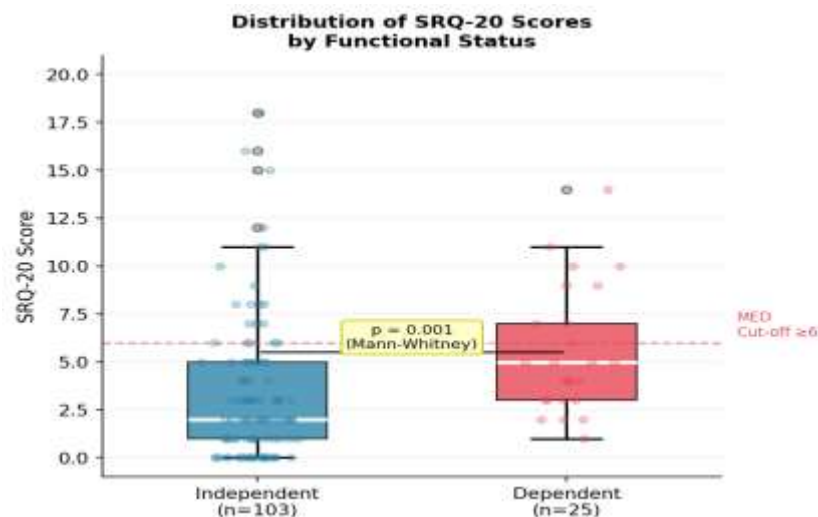
The relationship between functional status and mental–emotional health among adults aged 40 years and older



Blue dots = Independent; Red dots = Dependent.

Dashed line = linear regression line. Horizontal dotted line = MED cut-off (SRQ-20 $\geq$ 6).

Figure 1. Scatter Plot of Barthel Index Score vs SRQ-20 Score (Spearman $r=-0.322$; $p=0.0002$)



Middle line in box = median. Dots = individual data points. Dashed line = MED cut-off. Mann-Whitney U $p=0.001$.

Figure 2. Distribution of SRQ-20 Scores by Functional Status

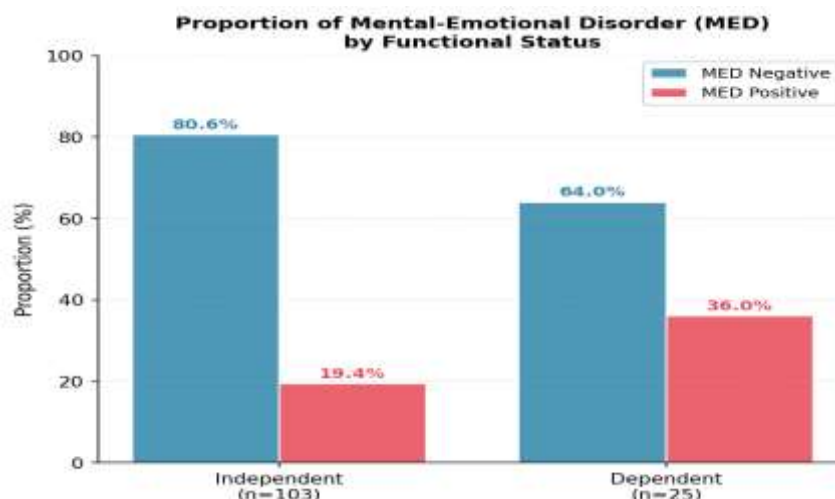
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The proportion of MED-positive respondents in the dependent group (36.0%) was nearly twice that of the independent group (19.4%).

Figure 3. Proportion of Mental-Emotional Disorder (MED) by Functional Status

DISCUSSION

This study found a MED prevalence of 22.7% among pre-elderly and elderly respondents using a SRQ-20 cut-off of ≥ 6 . This prevalence is broadly consistent with national evidence indicating a substantial burden of depression and mental–emotional problems among older Indonesians (Wardhani, Nantabah, Machfutra, Lestyoningrum, Oktarina, & Nurjana, 2024). A recent cross-sectional study at Sempaja Primary Health Centre the same city as the present study found that 40.4% of 99 elderly participants screened positive for mental health disorders, with psycho-emotional disorders (PED) ranking highest at 42.5%, underscoring the substantial mental health burden among the elderly in this region (Rahayu, Yolanda, Mursen, Jayadi, Fitriany, & Yudia, 2025). These findings underscore the importance of early MED detection in primary care facilities, as recommended by the Ministry of Health Indonesia through the community health center elderly program.

The primary finding of this study is the significant relationship between functional status and mental–emotional symptom burden, detected most strongly through continuous score analyses. The median SRQ-20 score in the dependent group (5.0) was significantly higher than in the independent group (2.0) by Mann-Whitney U test ($p=0.001$). The significant Spearman correlation ($r=-0.322$; $p=0.0002$)

further confirms that functional status decline is accompanied by an increase in mental–emotional symptom burden. The use of non-parametric tests was appropriate given the non-normal distribution of SRQ-20 scores (right-skewed), which is common in community-based mental health data. A depression prevalence of 16.3% among 4,236 community-dwelling older adults in Indonesia, with functional dependency (IADL scores) identified as one of the significant predictors consistent with the findings of the present study (Handajani, Schröder-Butterfill, Hogervorst, Turana, & Hengky, 2022).

The failure to achieve statistical significance in the categorical Fisher Exact test ($OR=2.334$; 95% CI: 0.901–6.045; $p=0.108$) requires careful interpretation. An OR of 2.334 is clinically meaningful dependent respondents had an approximately 2.3 times higher tendency for MED risk but the wide confidence interval reflects imprecision due to the small sample size in the dependent group ($n=25$). This phenomenon is known as type II error, where limited statistical power prevents detection of a clinically real association in categorical form. Affirm that even functional impairment without a formal depression diagnosis already represents a significant indicator of psychological distress in older adults, further supporting the relevance of the present findings (Folorunsho, Lawal, Ani, & Somuah, 2025).

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A 5.73 times higher risk of depression among Indonesian elderly with severe functional dependency (Dos Reis, Figueiredo, Biscaro, Lunardelli, & Maurici, 2022). At the global level, confirmed that both BADL and IADL disability were significantly associated with depressive symptoms among older adults in China (Liu et al., 2023). Limitations in activities of daily living were significantly associated with depressive symptoms among older adults, with the association remaining robust after controlling for sociodemographic covariates (Zuo & Chen, 2025). The relationship between ADL limitations and depression was mediated by sleep quality, illustrating the complexity of mechanisms linking physical function to mental health (Gao, Yang, Liu, Xin, & Liu, 2023). The landmark WHO World Health Survey covering 245,404 respondents across 60 countries, affirmed that the comorbid state of depression with physical illness produces greater health decrements than any chronic disease alone reinforcing the global public health urgency of addressing these co-occurring conditions (Ferrari, Santomauro, Mantilla Herrera, Shadid, Erskine, Charlson, & Stein, 2022).

Neurobiologically, chronic stress from functional dependency dysregulates the hypothalamic-pituitary-adrenal (HPA) axis, causing hypercortisolism implicated in late-life depression and anxiety. Psychosocially, functional dependency reduces autonomy and sense of control a key pathway to depression described in Seligman's theory of learned helplessness (Kok & Reynolds III, 2017). Loss of productive and social roles, dependency burden, and reduced social interaction are classical risk factors for MED recognized globally (World Health Organization, 2025). Specifically emphasized that cultural context and family support influence how functional dependency translates into psychological distress a consideration particularly relevant to the Kalimantan cultural setting, where multigenerational households remain common (Akosile et al., 2018). In a study of older adults in Spain, found that emotional distress was significantly associated with poorer quality of life, while psychological well-being served as a protective factor further supporting the argument that mental-emotional burden and functional decline are interconnected determinants of healthy aging (Lopez, Perez-Rojo, Noriega, Sánchez-Cabaco, Sitges, & Bonete, 2024).

The finding that MED prevalence among the pre-elderly group (40–59 years) was also notable (approximately 18–20%) warrants special attention. This suggests that mental health interventions should not target only the elderly (≥ 60 years) but should also extend to the pre-elderly, who may already be experiencing early functional decline and major life transitions. The importance of preventive approaches from the pre-elderly phase to slow the trajectory of both physical and mental functional decline (Pradana, Chiu, Lin, & Lee, 2023). Despite the growing elderly population, evidence-based studies on geriatric health particularly the co-occurrence of functional dependency and MED in community settings in Samarinda remain scarce. The multi-dimensional health needs of the elderly in this city, including physical, cognitive, and mental well-being, underscoring the relevance of integrated geriatric screening (Herrman, Kieling, McGorry, Horton, Sargent, & Patel, 2019).

The cross-sectional design does not permit causal inference or determination of the direction of the relationship. The purposive sampling technique may introduce selection bias. Important confounders such as chronic disease history, social support, economic status, and medication use were not controlled. The small sample size in the dependent group ($n=25$) limits statistical power for categorical analyses. Nevertheless, the strengths of this study include the use of two internationally validated instruments (Barthel Index and SRQ-20), a community-based setting, and its contribution as one of the few evidence-based studies on geriatric health in Kalimantan.

CONCLUSION

Poorer functional status was associated with a higher burden of mental–emotional symptoms among pre-elderly and elderly individuals. Functionally dependent participants had significantly higher SRQ-20 scores than those who were functionally independent, and functional status showed a significant negative correlation with mental–emotional symptom burden. These findings suggest that functional assessment may serve as an indicator for further mental-health assessment in community and primary-care settings. Integrating routine functional assessment using the Barthel Index together with mental-health screening using the SRQ-20 may help

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identify individuals who require additional evaluation and support. Future longitudinal studies with larger samples and adjustment for potential confounding factors are needed to clarify the temporal and causal relationship between functional status and mental–emotional health.

REFERENCES

- Akosile, C. O., Mgbefajedo, U. G., Maruf, F. A., Okoye, E. C., Umeonwuka, I. C., & Ogunniyi, A. (2018). Depression, functional disability and quality of life among Nigerian older adults: Prevalences and relationships. *Archives of Gerontology and Geriatrics*, 74, 39–43.
- Amlak, B. T., Getinet, M., Getie, A., Kebede, W. M., Tarekegn, T. T., & Belay, D. G. (2025). Functional disability in basic and instrumental activities of daily living among older adults globally: A systematic review and meta-analysis. *BMC Geriatrics*, 25(1), 413.
- Directorate of Population and Labor Statistics. (2023). *Indonesia population projection 2020–2050: Results of the 2020 population census*. Statistics Indonesia.
- Dos Reis, N. F., Figueiredo, F. C. X. S., Biscaro, R. R. M., Lunardelli, E. B., & Maurici, R. (2022). Psychometric properties of the Barthel Index used at intensive care unit discharge. *American Journal of Critical Care*, 31(1), 65–72.
- Ferrari, A. J., Santomauro, D. F., Mantilla Herrera, A. M., Shadid, J., Erskine, H. E., Charlson, F. J., & Stein, D. J. (2022). Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Psychiatry*, 9(2), 137–150.
- Folorunsho, S., Lawal, O. P., Ani, N. C., & Somuah, M. A. (2025). Functional impairment without depression diagnosis as an indicator of psychological distress in older adults. *Cambridge Prisms: Global Mental Health*, 12, e138.
- Gao, L., Yang, J., Liu, J., Xin, T., & Liu, Y. (2023). Activities of daily living and depression in Chinese elderly of nursing homes: A mediation analysis. *Psychology Research and Behavior Management*, 16, 29–38.
- GBD 2019 Mental Disorders Collaborators. (2022). Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Psychiatry*, 9(2), 137–150.
- Handajani, Y. S., Schröder-Butterfill, E., Hogervorst, E., Turana, Y., & Hengky, A. (2022). Depression among older adults in Indonesia: Prevalence, role of chronic conditions and other associated factors. *Clinical Practice and Epidemiology in Mental Health*, 18, e174501792207010.
- Herrman, H., Kieling, C., McGorry, P., Horton, R., Sargent, J., & Patel, V. (2019). Reducing the global burden of depression: A Lancet–World Psychiatric Association Commission. *The Lancet*.
- Idaiani, S., & Indrawati, L. (2021). Functional status in relation to depression among elderly individuals in Indonesia: A cross-sectional analysis of the Indonesian National Health Survey 2018. *BMC Public Health*, 21(1), 2332.
- Jalali, A., Ziapour, A., Karimi, Z., Rezaei, M., Emami, B., Kalhori, R. P., & Kazemini, M. (2024). Global prevalence of depression, anxiety, and stress in the elderly population: A systematic review and meta-analysis. *BMC Geriatrics*, 24(1), 809.
- Kok, R. M., & Reynolds, C. F., III. (2017). Management of depression in older adults: A review. *JAMA*, 317(20), 2114–2122.
- Liu, H., Ma, Y., Lin, L., Sun, Z., Li, Z., & Jiang, X. (2023). Association between activities of daily living and depressive symptoms among older adults in China: Evidence from the CHARLS. *Frontiers in Public Health*, 11, 1249208.

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- Lopez, J., Perez-Rojo, G., Noriega, C., Sánchez-Cabaco, A., Sitges, E., & Bonete, B. (2024). Quality of life in older adults: Its association with emotional distress and psychological wellbeing. *BMC Geriatrics*, 24(1), 815.
- Ministry of Health of the Republic of Indonesia. (2019). *Guidelines for community health centers on older adult empowerment*. Ministry of Health of the Republic of Indonesia.
- Ministry of Health of the Republic of Indonesia. (2019). *Indonesia basic health survey 2018: National report*. Ministry of Health of the Republic of Indonesia.
- Ministry of Health of the Republic of Indonesia. (2024). *Indonesia health survey 2023 in figures*. Ministry of Health of the Republic of Indonesia.
- Patel, H., Royall, P. G., Gaisford, S., Williams, G. R., Edwards, C. H., Warren, F. J., & Butterworth, P. J. (2017). Structural and enzyme kinetic studies of retrograded starch: Inhibition of α -amylase and consequences for intestinal digestion of starch. *Carbohydrate Polymers*, 164, 154–161.
- Pradana, A. A., Chiu, H. L., Lin, C. J., & Lee, S. C. (2023). Prevalence of frailty in Indonesia: A systematic review and meta-analysis. *BMC Geriatrics*, 23(1), 778.
- Prasetio, C. E., Triwahyuni, A., & Prathama, A. G. (2022). Psychometric properties of Self-Report Questionnaire-20 (SRQ-20) Indonesian version. *Jurnal Psikologi*, 49(1), 69–86.
- Rahayu, H. K., Yolanda, S. C., Mursen, H. K., Jayadi, A. K., Fitriany, E., & Yudia, R. C. (2025). Understanding mental health challenges in the elderly: Insights from the Self-Reporting Questionnaire at Sempaja Healthcare Center. *Jurnal Promkes*, 13, 51–57.
- Statistics Indonesia Samarinda Municipality. (2024). *Statistik kesejahteraan rakyat Kota Samarinda 2024*. Statistics Indonesia.
- Statistics Indonesia Kalimantan Timur Province. (2026). *Kalimantan Timur Province in figures 2026*. Statistics Indonesia.
- Wardhani, Y. F., Nantabah, Z. K., Machfutra, E. D., Lestyoningrum, S. D., Oktarina, & Nurjana, M. A. (2024). The prevalence and distribution of risk factors for depression and emotional mental disorders in the elderly in Indonesia. *International Journal of Social Psychiatry*, 70(4), 763–771.
- World Health Organization. (2025). *Mental health of older adults*. <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>
- Zuo, X., & Chen, Y. (2025). Association between activities of daily living and depression symptoms among older adults in China: A nationally representative cross-sectional survey. *BMC Psychology*, 13(1), 989.

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