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Analysis of factors related to stress levels in outpatients with diabetes mellitus and hypertension during the Covid-19 pandemic in Aceh Besar Regency

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ABSTRACT

The prognosis of COVID-19 is influenced by age and comorbidities such as hypertension, diabetes mellitus (DM), pulmonary diseases, and obesity. Observations have found that patients who test positive for the coronavirus often experience anxiety and have high stress levels, particularly among outpatients at health centers. This study aims to analyze the factors related to stress levels in outpatients with DM and hypertension during the COVID-19 pandemic at Krueng Barona Jaya Health Center, Aceh Besar Regency. This quantitative research employs a cross-sectional study approach. The sample consists of 111 individuals out of a total of 154 outpatients with DM and hypertension in the working area of Krueng Barona Jaya Health Center, Aceh Besar Regency, selected through stratified proportional random sampling. Data collection was conducted in the working area of Krueng Barona Jaya Health Center from August 4 to August 10, 2022, using questionnaires distributed to the respondents. The statistical test used was logistic regression with STATA software. The study results showed that 45 individuals (45.04%) experienced moderate stress levels. Bivariate analysis revealed a partial relationship between knowledge, family support, and income with the stress levels of outpatients with DM and hypertension during the COVID-19 pandemic at Krueng Barona Jaya Health Center, Aceh Besar Regency ($p<0.05$).

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INTRODUCTION

Coronavirus Disease (COVID-19) is a group of viruses that can infect the respiratory system, first emerging in Wuhan City, People's Republic of China (PRC). The spread of this virus is very rapid and extremely deadly(Karnadi & Kusumahadi, 2021; Khairulbahri, 2021). The virus spreads through direct physical contact, transmitted via the mouth, nose, and eyes. To break the chain of COVID-19 transmission, the government and religious institutions have issued several regulations for the public to follow(Benvenuto et al., 2020; Kang et al., 2020; Salata et al., 2020).

The transmission of the Coronavirus is facilitated by several factors, including the lack of community immunity, delayed preventive responses, insufficient diagnostic tools, and challenges in implementing physical distancing in society. These factors have unprecedented impacts on health, political, economic, and social systems(Karnadi & Kusumahadi, 2021; Olivia et al., 2020). Groups with lower immunity, such as the elderly and individuals with certain pre-existing conditions like heart disease, diabetes, respiratory diseases, hypertension, and malignancies, are at higher risk of contracting COVID-19(Okeahalam et al., 2020; Susilawati et al., 2020; Wu et al., 2020).

Currently, there is an increase in the number of COVID-19 pandemic cases worldwide, as indicated by global coronavirus data from the World Health Organization (WHO), which has classified COVID-19 as a pandemic affecting all parts of the world (Horesh & Brown, 2020). The study conducted in Indonesia showed that the spiritual level and quality of life of patients with Diabetes Mellitus were high, and there was a relationship between the spiritual level and the quality of life of patients with Diabetes Mellitus during the COVID-19 pandemic(Handayani et al., 2022). The prognosis of COVID-19 is influenced by age and comorbid conditions such as hypertension, diabetes mellitus, pulmonary diseases, and obesity(Arifin & Anas, 2021; Karnadi & Kusumahadi, 2021; Tenda et al., 2021). Individuals with comorbid conditions like diabetes mellitus and hypertension have a higher risk of severe COVID-19 outcomes due to a combination of factors, including a weakened immune system, increased inflammation, impaired organ function, and metabolic disturbances. The SARS-CoV-2 virus takes advantage of the upregulation of angiotensin-converting enzyme 2 (ACE2) receptors in these individuals, leading to easier viral entry and a heightened inflammatory response that can exacerbate existing cardiovascular and respiratory problems, increase the risk of coagulation disorders, and ultimately contribute to a higher likelihood of complications and mortality from COVID-19.

Individuals with comorbidities are at higher risk of incurring increased healthcare costs, experiencing delays in recovery, and facing fatal outcomes(Charlson et al., 2007). This is because people with comorbidities have weaker immune systems compared to those without comorbidities. Additionally, they may already suffer from complications or organ damage due to their existing conditions. Initial data shows that COVID-19 positive patients predominantly have comorbid conditions, with 49.7% having hypertension and 36.5% having diabetes mellitus. The data also indicates that patients who died from COVID-19 often had comorbid conditions, with 9.4% having diabetes mellitus and 9.2% having hypertension.

At Krueng Barona Jaya Health Center in Aceh Besar, 18 patients had died from COVID-19 by August 2022. The majority of these patients had comorbid conditions: 33% had hypertension, 28% had diabetes mellitus, 22% had heart disease, and 17% had other comorbid conditions. Osibogun et al. (2021) found that the mortality rate among COVID-19 patients with comorbid conditions was significantly higher, at 3.3%, compared to COVID-19 patients without comorbid conditions.

Mental health has become a crucial consideration for individuals practicing self-isolation due to the increased risk of COVID-19 infection. Currently, no entity worldwide can determine when this pandemic will end(Suppawittaya et al., n.d.; Zhao et al., 2024). The abundance of information, or "infodemic," also triggers anxiety and stress. Additionally, the shift from real-life activities to increased online interactions can serve as strong stressors for the public during the COVID-19 pandemic (Jain et al., 2020; Zhao et al., 2024). Stress during the COVID-19 pandemic can be attributed to a lack of knowledge on maintaining health during this period. Therefore, health education is essential, as research by Rahmawati indicates a 30%-40% increase in knowledge and a 72.7% improvement in psychomotor skills through health education during the pandemic, which can enhance stress management(Chtourou et al., 2020). Furthermore, stress can also be caused by a lack of motivation from those around the individuals(PH et al., 2020).

Based on the aforementioned background, this study aims to analyze the factors associated with the stress levels of outpatients with Diabetes Mellitus (DM) and Hypertension during the COVID-19 pandemic at the Krueng Barona Jaya Health Center in Aceh Besar Regency.

RESEARCH METHOD

The research design is a quantitative, systematic, and structured framework used to conduct this descriptive-analytical study with a cross-sectional approach. The aim is to examine the relationship between variables such as knowledge, education, age, occupation, family support, income, behavior, and information media, with stress levels in outpatients with Diabetes Mellitus and Hypertension at the Krueng Barona Jaya Community Health Center, Aceh Besar Regency. This study was conducted in 12 villages within the working area of the Krueng Barona Jaya Health Center, Aceh Besar Regency, from August 4-10, 2022. The research population comprised all outpatient Diabetes Mellitus (DM) and hypertension patients at the Krueng Barona Jaya Health Center during the period of January-July 2022, totaling 154 patients. The research sample was determined using Slovin's formula with a 5% margin of error, resulting in 111 samples, which were taken through stratified proportional random sampling based on the population in each village. The sample size calculation yielded 111 respondents with the following inclusion criteria: 1) Outpatient DM and hypertension patients within the working area of the Krueng Barona Jaya Health Center, 2) Registered as patients receiving DM and hypertension treatment at the Health Center, 3) Able to communicate well, and 4) Willing to participate as respondents. Exclusion criteria included: 1) Child patients, 2) Patients unable to communicate well, and 3) Patients unwilling to participate as respondents. The data collection method for this study involved primary data obtained through direct interviews with respondents using questionnaires, as well as secondary data from relevant agencies such as the Health Office, Health Center, Sub-district Office, and BPS (Central Statistics Agency). The validity test was conducted to ensure that the items in the questionnaire can accurately measure the variables of interest, such as knowledge, education, age, occupation, family support, income, behavior, and information media. The validity of the questionnaire was tested using the Pearson product-moment correlation technique, where items with a correlation value above 0.3 were considered valid and can be used in the research. Data processing included editing, coding, transferring, and tabulation before analysis using STATA version 14. Data analysis was performed using univariate and bivariate analysis. Univariate analysis was conducted to observe the frequency distribution of variables, while bivariate analysis was used to determine the relationship between independent and dependent variables.

RESULTS AND DISCUSSIONS

Univariate Analysis

The univariate analysis of stress levels among outpatient Diabetes Mellitus (DM) and hypertension patients during the COVID-19 pandemic at Krueng Barona Jaya Health Center, Aceh Besar Regency, was conducted using quantitative research methods.

Socio-Demographic Characteristics of Outpatient DM and Hypertension Patients at Krueng Barona Jaya Health Center, Aceh Besar Regency

Table 1. Frequency distribution of socio-demographic characteristics of outpatient dm and hypertension patients in Aceh Besar Regency

No	Characteristic	Frequency (n)	%
1	Age		
	Old	73	65.77
	Adult	37	33.33
	Teen	1	0.90
2	Employment Status		

No	Characteristic	Frequency (n)	%
	Unemployed	50	45.05
	Employed (Civil/Military/Private)	61	54.95
3	Education Level		
	No Schooling/Primary/Middle	23	20.72
	High School	44	39.64
	Diploma/Bachelor's/Master's/Doctorate	44	39.64
4	Income		
	< Rp. 3,165,030	72	64.86
	≥ Rp. 3,165,030	39	35.14

Table 1 shows that the socio-demographic characteristics of respondents by age are as follows: 1 person (0.90%) is a teen, 37 people (33.33%) are adults, and 73 people (65.77%) are old, indicating that the majority of respondents are older. Regarding employment status, 50 respondents (45.05%) are unemployed, while 61 respondents (54.95%) are employed, indicating that the majority of respondents are employed. Regarding education level, 23 respondents (20.72%) have no schooling/primary/middle school education, 44 respondents (39.64%) have a high school education, and 44 respondents (39.64%) have a diploma/bachelor's/master's/doctorate education, indicating that the majority of respondents have a high school or higher education. Regarding income, 72 respondents (64.86%) earn less than Rp. 3,165,030, while 39 respondents (35.14%) earn Rp. 3,165,030 or more, indicating that the majority of respondents have a lower income.

Table 2. Frequency distribution of stress, knowledge, family support, behavior, and information media among outpatient dm and hypertension patients at Krueng Barona Jaya Health Center, Aceh Besar Regency

No	Variable	Indicator	Frequency (n)	%
1	Stress	Moderate	45	40.54
		Mild	26	23.42
		Normal	40	36.04
2	Knowledge	Poor	60	54.05
		Good	51	45.95
3	Family Support	None	21	18.92
		Present	90	81.08
4	Behavior	Poor	30	27.03
		Good	81	72.97
5	Information Media	Limited	42	37.84
		Extensive	69	62.16

Source: Processed primary data, 2022

The data reveals that a significant portion of outpatient DM and Hypertension patients at Krueng Barona Jaya Health Center experience moderate stress (40.54%), with others reporting mild (23.42%) and normal (36.04%) stress levels. Over half of the patients (54.05%) have poor knowledge about their condition, highlighting a need for better education, while 45.95% have good knowledge. Family support is prevalent, with 81.08% of patients receiving support, which is crucial for effective disease management. The majority of patients (72.97%) exhibit good health behaviors, though 27.03% show poor behaviors, indicating a need for behavioral interventions. Additionally, 62.16% of patients have extensive access to information, while 37.84% have limited access, suggesting that information dissemination needs to be enhanced to reach all patients effectively. Overall, the data suggests that interventions in education, stress management, behavior modification, and information access could significantly improve the management of DM and Hypertension among these patients.

Table 3. Bivariate analysis of the relationship between knowledge, education, age, occupation, family support, income, behavior, and information media with the stress levels of outpatient DM and hypertension patients

Knowledge	Stress Level			Total	OR	CI (95%)	P-Value
	Medium	Light	normal				
Good	29	15	16	60	2,23	1,102- 4,518	0,026
Poor	16	11	24	51			
Total	45	26	40	111			
Education							
High	9	6	8	23	0,84	0,532 - 1,331	0,461
Medium	15	11	18	44			
Low	21	9	14	44			
Total	45	26	40	111			
			Age				
Teen	1	0	0	1	1,148	0,569 - 2.316	0,699
Adult	13	9	15	37			
Old	31	17	25	73			
Total	45	26	40	111			
Employment Status							
Employed	26	14	21	50	0,839	0,500 – 0,680	0,622
Unemployed	19	12	19	61			
Total	45	26	40	111			
Family Support							
Present	32	22	36	90	2,914	1,133 – 7,488	0,026
Absent	13	4	4	21			
Total	45	26	40	111			
Income							
High	12	6	21	39	2,556	1,204 - 5.426	0,015
Low	33	20	19	72			
Total	45	26	40	111			
Behavior							
Good	30	18	33	30	1,891	0,864 – 4,141	0,111
Poor	15	8	7	81			
Total	45	26	40	111			
Information Media							
Extensive	27	14	28	42	1,381	0,680 - 2.805	0,371
Limited	18	12	12	69			
Total	45	26	40	111			

The data analysis of outpatient DM and Hypertension patients at Krueng Barona Jaya Health Center reveals several key insights into the factors affecting their stress levels. Knowledge about their condition significantly influences stress, with patients possessing good knowledge having higher odds (OR = 2.23, CI = 1.102-4.518, P-Value = 0.026) of experiencing moderate stress compared to those with poor knowledge. Family support also plays a crucial role; patients with family support are significantly more likely (OR = 2.914, CI = 1.133-7.488, P-Value = 0.026) to experience moderate stress than those without support. Income level is another significant factor, as patients with higher incomes are more likely (OR = 2.556, CI = 1.204-5.426, P-Value = 0.015) to experience moderate stress compared to those with lower incomes. In contrast, several factors do not show a significant impact on stress levels. Education level, whether high, medium, or low, does not significantly affect stress, with an OR of 0.84 (CI = 0.532-1.331, P-Value = 0.461). Age is also not a significant factor, with the odds ratio indicating no substantial difference in stress levels across different age groups (teen, adult, old) (OR = 1.148, CI = 0.569-2.316, P-Value = 0.699). Employment status similarly shows no significant effect on stress, with employed and unemployed patients having comparable stress levels (OR = 0.839, CI = 0.500-1.680, P-Value = 0.622). Behavior, whether good or poor, does not significantly impact stress levels, as indicated by an OR of 1.891 (CI = 0.864-4.141, P-Value = 0.111). Lastly, access to information media, whether extensive or limited, does not significantly alter stress levels, with an OR of 1.381 (CI = 0.680-2.805, P-Value = 0.371).

Discussions

The research results indicate that data from outpatient DM and Hypertension patients at Krueng Barona Jaya Health Center provide important insights into the various factors affecting stress levels in this population. A significant finding is the role of knowledge in influencing stress levels. Patients who have a good understanding of their condition are more likely to experience moderate stress compared to those with less knowledge. This suggests that well-informed patients may be more aware of the complexities and challenges in managing their condition, thus increasing their stress levels. An odds ratio of 2.23 (CI = 1.102-4.518, P-Value = 0.026) underscores the importance of patient education as a critical component in stress management and overall disease management strategies.

Family support also emerges as an important factor. Patients with family support exhibit significantly higher moderate stress levels (OR = 2.914, CI = 1.133-7.488, P-Value = 0.026) compared to those without support. This may seem counterintuitive at first glance, as family support is generally considered a buffer against stress. However, this higher stress level may reflect a greater sense of responsibility and pressure to meet family expectations and effectively manage their health. This highlights the complex interaction between family dynamics and patient stress, suggesting that while family support is crucial, it must be balanced with appropriate coping mechanisms and psychological support. Income level also significantly affects stress levels. Patients with higher incomes are more likely to experience moderate stress compared to those with lower incomes (OR = 2.556, CI = 1.204-5.426, P-Value = 0.015). This finding challenges the common assumption that higher income correlates with lower stress. It may reflect the pressures and demands associated with maintaining a higher income, as well as the possible need for more significant lifestyle adjustments required to manage chronic conditions. This underscores the need for stress management interventions tailored to socioeconomic status. In contrast, several factors do not show a significant impact on stress levels. Education level, whether high, medium, or low, does not significantly affect stress (OR = 0.84, CI = 0.532-1.331, P-Value = 0.461). Similarly, age does not significantly influence stress levels, with no substantial differences observed among different age groups (teen, adult, old) (OR = 1.148, CI = 0.569-2.316, P-Value = 0.699). Employment status also shows no significant effect, with employed and unemployed patients having comparable stress levels (OR = 0.839, CI = 0.500-1.680, P-Value = 0.622). These findings suggest that stress among these patients is more closely related to factors such as knowledge, family support, and income rather than demographic variables like age, education, or employment status.

Stress during the Covid-19 pandemic can be caused by a lack of knowledge about maintaining health during this period. Health education is necessary, as shown by a study conducted by kaligis , which reported a 30%-40% increase in knowledge and a 72.7% improvement in psychomotor skills due to health education during the Covid-19 pandemic, leading to better stress managemen(Kaligis et al., 2020)t. Additionally, stress can also result from a lack of motivation from those around the individual(Jahrami et al., 2020a, 2020b). Patient knowledge about diabetes mellitus (DM) is crucial for managing the disease. The more extensive and better their understanding of diabetes, the more effectively they can manage it. Changing behavior can also help control the disease, leading to longer survival and an improved quality of life. Low knowledge levels can make individuals more prone to stress, as ignorance about a subject can be perceived as a pressure that leads to crises and anxiety. Stress and anxiety can occur in individuals with low knowledge levels due to insufficient information (Jahrami et al., 2020b)According to Heriani's research, one way to manage diabetes mellitus is by knowing and understanding the disease. Knowledge is the result of awareness that occurs after an individual senses a specific object. Coping mechanisms are the strategies individuals use to solve problems, adapt to changes, and respond to threatening situations(Abouammoh et al., 2020; Bondarchuk et al., 2024) The variable of family support has the smallest p-value compared to other variables. This indicates that family support is the most dominant factor associated with stress levels in outpatients with DM

and hypertension during the COVID-19 pandemic at Krueng Barona Jaya Health Center, Aceh Besar Regency. This finding is consistent with research by Click or tap here to enter text.on family support and stress levels in hemodialysis clients, which found a significant relationship between family support and stress levels in chronic kidney failure patients. Family support can effectively reduce stress experienced by individuals, especially those who are ill. Increased stress disrupts mental and emotional balance, which, although not directly causing death, affects productivity and quality of life. Family support serves as a preventive strategy to reduce stress in patients with Type 2 DM (Powers et al., 2017; Strom & Egede, 2012; Theodoritsi et al., 2016). Families of DM and hypertension patients should continuously support and accompany the patients in managing their diseases to reduce stress. Families that provide mutual support help DM patients feel valued, cared for, and loved. These feelings motivate patients and make them more enthusiastic about life, helping them accept their DM condition more willingly.

CONCLUSION

The study findings revealed that 45.04% of the participants experienced moderate stress levels. Bivariate analysis further identified that knowledge, family support, and income were significantly associated with the stress levels of outpatients with DM and hypertension during the pandemic ($p<0.05$). In contrast, factors such as education, age, type of employment, behavior, and information media did not show a significant relationship with the stress levels of the target population. These findings provide valuable insights that can guide the development of more appropriate interventions to manage the stress levels of patients with chronic conditions, particularly among those with low knowledge, limited family support, and low income. By addressing these key factors, healthcare providers and policymakers can implement targeted strategies to enhance the well-being and quality of life of outpatients with DM and hypertension during challenging times, such as the COVID-19 pandemic. The study had several limitations that may affect the interpretation of the results. The relatively small sample size may limit the generalizability of the findings, and the cross-sectional design provides only a snapshot of the relationships between the variables, rather than capturing changes over time. Additionally, the reliance on self-reported data could be subject to recall or social desirability bias. Future research could address these limitations by expanding the study scope to include other chronic conditions, designing and evaluating targeted interventions based on the identified factors (knowledge, family support, and income), utilizing mixed-methods approaches to gain a more comprehensive understanding, conducting longitudinal studies to track long-term impacts, and investigating the role of digital health technologies in supporting the management of stress and chronic conditions, particularly during challenging periods such as the COVID-19 pandemic. Addressing these limitations and incorporating these suggestions could lead to the development of more effective and tailored interventions to enhance the well-being and quality of life of outpatients with chronic conditions.

References

Abouammoh, N., Irfan, F., & Alfaris, E. (2020). Stress coping strategies among medical students and trainees in Saudi Arabia: A qualitative study. *BMC Medical Education*, *20*(1). https://doi.org/10.1186/S12909-020-02039-Y

Arifin, B., & Anas, T. (2021). Lessons learned from COVID-19 vaccination in Indonesia: experiences, challenges, and opportunities. *Human Vaccines & Immunotherapeutics*, *17*(11), 3898–3906. https://doi.org/10.1080/21645515.2021.1975450

Benvenuto, D., Giovanetti, M., Salemi, M., Prosperi, M., De Flora, C., Junior Alcantara, L. C., Angeletti, S., & Ciccozzi, M. (2020). The global spread of 2019-nCoV: a molecular evolutionary analysis. *Pathogens and Global Health*, *114*(2), 64–67. https://doi.org/10.1080/20477724.2020.1725339

Bondarchuk, O., Balakhtar, V., Pinchuk, N., Pustovalov, I., & Pavlenok, K. (2024). Coping with stressfull situations using coping strategies and their impact on mental health. *Multidisciplinary Reviews*, *7*, 2024spe034-2024spe034. https://doi.org/10.31893/MULTIREV.2024SPE034

Charlson, M., Charlson, R. E., Briggs, W., & Hollenberg, J. (2007). Can disease management target patients most likely to generate high costs? The impact of comorbidity. *Journal of General Internal Medicine*, *22*(4), 464–469. https://doi.org/10.1007/S11606-007-0130-7/METRICS

Chtourou, H., Trabelsi, K., H'Mida, C., Boukhris, O., Glenn, J. M., Brach, M., Bentlage, E., Bott, N., Jesse Shephard, R., Ammar, A., & Luigi Bragazzi, N. (2020). Staying physically active during the quarantine and self-isolation period for controlling and mitigating the covid-19 pandemic: A systematic overview of the literature. *Frontiers in Psychology*, *11*, 548920. https://doi.org/10.3389/FPSYG.2020.01708/BIBTEX

Handayani, S., Ilmiah, J., Keperawatan, B., Kesehatan, D., Hasneli, Y., Amir, Y., Keperawatan, F., & Riau, U. (2022). Hubungan Tingkat Spiritual Terhadap Kualitas Hidup Penderita Diabetes Melitus di Masa Pandemi Covid-19. *Indonesian Journal of Nursing Research (IJNR)*, *5*(2), 117–126. https://doi.org/10.35473/IJNR.V5I2.1820

Jahrami, H., Buheji, M., & Dhahi, A. S. (2020a). Minimising Stress Exposure During Pandemics Similar to COVID-19. *International Journal of Psychology and Behavioral Sciences*, *2020*(1), 9–16. https://doi.org/10.5923/j.ijpbs.20201001.02

Jahrami, H., Buheji, M., & Dhahi, A. S. (2020b). Minimising Stress Exposure During Pandemics Similar to COVID-19. *International Journal of Psychology and Behavioral Sciences*, *2020*(1), 9–16. https://doi.org/10.5923/j.ijpbs.20201001.02

Jain, A., Bodicherla, K., Raza, Q., & Sahu, K. (2020). Impact on mental health by "Living in Isolation and Quarantine" during COVID-19 pandemic. *Journal of Family Medicine and Primary Care*, *9*(10), 5415. https://doi.org/10.4103/JFMPC.JFMPC_1572_20

Kaligis, F., Indraswari, M. T., & Ismail, R. I. (2020). Stress during COVID-19 pandemic: mental health condition in Indonesia. *Medical Journal of Indonesia*, *29*(4), 436–441. https://doi.org/10.13181/MJI.BC.204640

Kang, S., Peng, W., Zhu, Y., Lu, S., Zhou, M., Lin, W., Wu, W., Huang, S., Jiang, L., Luo, X., & Deng, M. (2020). Recent progress in understanding 2019 novel coronavirus (SARS-CoV-2) associated with human respiratory disease: detection, mechanisms and treatment. *International Journal of Antimicrobial Agents*, *55*(5), 105950. https://doi.org/10.1016/J.IJANTIMICAG.2020.105950

Karnadi, E. B., & Kusumahadi, T. A. (2021). Why Does Indonesia Have a High Covid-19 Case-Fatality Rate? *JEJAK: Jurnal Ekonomi Dan Kebijakan*, *14*(2), 272–287. https://doi.org/10.15294/JEJAK.V14I2.29580

Khairulbahri, M. (2021). Lessons learned from three Southeast Asian countries during the COVID-19 pandemic. *Journal of Policy Modeling*, *43*(6), 1354–1364. https://doi.org/10.1016/J.JPOLMOD.2021.09.002

Okeahalam, C., Williams, V., & Otwombe, K. (2020). Factors associated with COVID-19 infections and mortality in Africa: A cross-sectional study using publicly available data. *BMJ Open*, *10*(11). https://doi.org/10.1136/BMJOPEN-2020-042750

Olivia, S., Gibson, J., & Nasrudin, R. (2020). Indonesia in the Time of Covid-19. *Bulletin of Indonesian Economic Studies*, *56*(2), 143–174. https://doi.org/10.1080/00074918.2020.1798581

PH, L., Mubin, M. F., & Basthomi, Y. (2020). "Learning Task" Attributable to Students' Stress During the Pandemic Covid-19. *Jurnal Ilmu Keperawatan Jiwa*, *3*(2), 203–208. https://doi.org/10.32584/JIKJ.V3I2.590

Powers, M. A., Bardsley, J., Cypress, M., Duker, P., Funnell, M. M., Fischl, A. H., Maryniuk, M. D., Siminerio, L., & Vivian, E. (2017). Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Educator*, *43*(1), 40–53. https://doi.org/10.1177/0145721716689694/ASSET/0145721716689694.FP.PNG_V03

Salata, C., Calistri, A., Parolin, C., & Palù, G. (2020). Coronaviruses: A paradigm of new emerging zoonotic diseases. *Pathogens and Disease*, *77*(9). https://doi.org/10.1093/FEMSPD/FTAA006

Strom, J. L., & Egede, L. E. (2012). The Impact of social support on outcomes in adult patients with type 2 diabetes: A systematic review. *Current Diabetes Reports*, *12*(6), 769–781. https://doi.org/10.1007/S11892-012-0317-0/METRICS

Suppawittaya, P., Yiemphat, P., & Yasri, P. (n.d.). Effects of Social Distancing, Self-Quarantine and Self-Isolation during the COVID-19 Pandemic on People's Well-Being, and How to Cope with It. *International Journal of Science and Healthcare Research (Www.Ijshr.Com)*, *5*(2), 12. Retrieved July 17, 2024, from www.ijshr.com

Susilawati, S., Falefi, R., & Purwoko, A. (2020). Impact of COVID-19's Pandemic on the Economy of Indonesia. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, *3*(2), 1147–1156. https://doi.org/10.33258/BIRCI.V3I2.954

Tenda, E. D., Asaf, M. M., Pradipta, A., Kumaheri, M. A., & Susanto, A. P. (2021). The COVID-19 surge in Indonesia: what we learned and what to expect. *Breathe*, *17*(4). https://doi.org/10.1183/20734735.0146-2021

Theodoritsi, A., Aravantinou, M. E., Gravani, V., Bourtsi, E., Vasilopoulou, C., Theofilou, P., & Polikandrioti, M. (2016). Factors Associated with the Social Support of Hemodialysis Patients. *Iranian Journal of Public Health*, *45*(10), 1261. /pmc/articles/PMC5149489/

Wu, F., Zhao, S., Yu, B., Chen, Y. M., Wang, W., Song, Z. G., Hu, Y., Tao, Z. W., Tian, J. H., Pei, Y. Y., Yuan, M. L., Zhang, Y. L., Dai, F. H., Liu, Y., Wang, Q. M., Zheng, J. J., Xu, L., Holmes, E. C., & Zhang, Y. Z. (2020). A new coronavirus associated with human respiratory disease in China. *Nature*, *579*(7798), 265–269. https://doi.org/10.1038/S41586-020-2008-3

Zhao, Y., An, Y., Tan, X., & Li, X. (2024). Mental Health and Its Influencing Factors among Self-Isolating Ordinary Citizens during the Beginning Epidemic of COVID-19. *Loss and Trauma in the COVID-19 Era*, 79–92. https://doi.org/10.4324/9781032647876-9