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RESEARCH ARTICLE

INFLUENCE OF BIOPSYCHOSOCIAL FACTORS ON ADAPTIVE COPING STRATEGIES AMONG COVID-19 SURVIVORS IN SURAKARTA

(FAKTOR-FAKTOR BIOPSIKOSOSIAL YANG BERPENGARUH TERHADAP MEKANISME KOPING ADAPTIF PADA PENYINTAS COVID-19 DI SURAKARTA)

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ABSTRACT

The COVID-19 pandemic has unleashed a profound psychological crisis, markedly increasing rates of depression, anxiety, loneliness, and PTSD, especially among young adults, women, racialized communities, and individuals with lower education and income. Effective coping strategies like positive reframing, humor, and acceptance have been linked to improved mental health outcomes, while maladaptive coping correlates with worsening psychosocial symptoms. This study explores the biopsychosocial factors that shape adaptive coping mechanisms in COVID-19 survivors. Using a cross-sectional design and quantitative approach, data were analyzed using logistic regression analysis. The study involved 378 COVID-19 survivors from Surakarta, who completed both online (via Telegram and WhatsApp) and offline questionnaires between November 2022 and January 2023. The sample predominantly consisted of women (73%, n=276) aged 18-40 years (89.7%, n=339), with a high prevalence of adaptive coping mechanisms (97.1%, n=367). Results revealed that gender (p=0.029, B=-1.497), history of mental disorders (p=0.039, B=-2.002), and alcohol/substance use (p=0.027, B=-2.572) had a significant influence on adaptive coping. These findings suggest that gender, mental health history, and substance use as crucial factors influencing adaptive coping among COVID-19 survivors.

Keywords: adaptive coping, biopsychosocial factors, COVID-19 survivors

ABSTRAK

Krisis kesehatan yang disebabkan oleh pandemi COVID-19 telah memicu perubahan psikologis yang signifikan. Selama pandemi, tingkat depresi, kecemasan, kesepian, dan PTSD meningkat drastis, terutama di kalangan dewasa muda, perempuan, komunitas yang dirasialisasikan, serta mereka yang berpendidikan dan berpendapatan rendah. Strategi koping adaptif seperti penyusunan ulang positif, humor, dan penerimaan dikaitkan dengan hasil kesehatan mental yang lebih baik sedangkan koping maladaptif dikaitkan dengan peningkatan

gejala psikososial. Penelitian ini bertujuan untuk mengidentifikasi faktor-faktor biopsikososial yang memengaruhi mekanisme koping adaptif pada penyintas COVID-19. Metode penelitian yang digunakan adalah studi potong lintang dengan pendekatan kuantitatif, dan data dianalisis menggunakan uji regresi logistik. Sebanyak 378 penyintas COVID-19 di Surakarta menjadi subjek penelitian, mengisi kuesioner secara daring melalui Telegram dan Whatsapp, serta secara luring pada November 2022 hingga Januari 2023. Mayoritas subjek adalah perempuan (73%, n=276) berusia 18-40 tahun (89,7%, n=339), dan menggunakan mekanisme koping adaptif (97,1%, n=367). Hasil analisis menunjukkan bahwa jenis kelamin (p=0.029, B=-1.497), riwayat gangguan jiwa (p=0.039, B=-2.002), dan penggunaan alkohol/zat adiktif (p=0.027, B=-2.572) berpengaruh signifikan terhadap mekanisme koping adaptif. Dengan demikian, penelitian ini menyimpulkan bahwa faktor jenis kelamin, riwayat gangguan jiwa, dan penggunaan alkohol/zat adiktif memainkan peran penting dalam mekanisme koping adaptif pada penyintas COVID-19.

Kata kunci: faktor biopsikososial, koping adaptif, penyintas COVID-19

INTRODUCTION

On January 30, 2020, the World Health Organization (WHO) declared COVID-19 a global public health emergency.[1] The number of COVID-19 cases increased rapidly and spread to many countries, including Indonesia. The health crisis caused by the COVID-19 pandemic triggered psychological changes such as fear, anxiety, depression, and a sense of insecurity. These disturbances were experienced not only by health-care workers and medical personnel, but also by the general population who experienced the psychological impact of COVID-19.[2]

Several months after infection, COVID-19 survivors were found to have an elevated risk of depression, anxiety, insomnia, and post-traumatic stress disorder (PTSD).[3,4] Female individuals and those with a prior psychiatric history are at greater risk of developing post-COVID psychiatric complaints. These long-term psychiatric symptoms affect quality of life and are associated with cognitive impairment and fatigue syndrome.[5] In response to these adverse mental-health symptoms, individuals tend to employ various coping mechanisms to reduce psychological and physiological stress.[6] Lazarus and Folkman defined coping as an individual's effort to manage stress by applying external or internal strategies perceived as demands that exceed the person's capacity.[7]

Within the context of the COVID-19 pandemic, coping strategies such as positive reframing, humor, and acceptance have been linked to better mental-health outcomes. Conversely, behavioral disengagement, lack of instrumental support, and self-blame have been associated with greater psychosocial symptoms and poorer mental-health outcomes.[8] Studies investigating coping

strategies have been conducted previously.[9] A survey of residents in Germany regarding coping during the COVID-19 pandemic showed that their coping strategies were largely problem-focused.[10] In contrast, research on knowledge and coping strategies among the Indonesian population during the pandemic indicated a predominance of emotion-focused approaches.[11] Among COVID-19 survivors, the most frequently employed emotion-focused coping mechanisms include seeking emotional support, denial, and self-distraction.[8]

Based on this background, the authors aimed to investigate the biopsychosocial factors associated with adaptive coping mechanisms among COVID-19 survivors.

MATERIALS AND METHODS

This study employed an analytic observational design with a cross-sectional approach. The study population consisted of COVID-19 survivors residing in Surakarta, Indonesia. Inclusion criteria were: age ≥ 18 years, ability to read and write, and ability to use a smartphone to complete a Google Form. Exclusion criteria included a history of severe mental disorders, current severe psychiatric illness, or serious medical conditions. Participants were recruited using purposive sampling, with a minimum sample size of 302 calculated according to the formula developed by Isaac and Michael. Data collection was conducted from November 2022 to January 2023, yielding a total of 378 participants.

Data were obtained both online—via Telegram and WhatsApp—and offline. Participants completed a Google Form comprising demographic information, biopsychosocial factors, and the Jalowiec Coping Scale to assess coping mechanisms. Operational definitions of each variable are presented in Table 1. Data were analyzed using logistic regression to identify factors associated with adaptive coping mechanisms among COVID-19 survivors. Statistical significance was set at $p < 0.05$.

Ethical approval for this study was granted by the Health Research Ethics Committee of Dr. Moewardi General Hospital in Surakarta, Indonesia (Approval No. 784/VI/HERC/2022).

Table 1 Operational definitions of variables

Variable	Definition	Indicator/ Category	Measurement Scale	Instrument
Age	Age of the respondent at the time of the study	1. 18-40 years 2. 41-60 years 3. >60 years	Ordinal	Questionnaire
Sex	Biological sex as stated on official identification (e.g., national ID card)	1. Male 2. Female	Nominal	Questionnaire
Educational Level	Highest level of formal education completed	1. Elementary & Junior High School 2. Senior High School 3. Bachelor's Degree 4. Master's or higher	Ordinal	Questionnaire
COVID-19 Wave	Period during which the respondent was infected with COVID-19	1. Wave I (March 2020–May 2021) 2. Wave II (June 2021–December 2021) 3. Wave III (January 2022–2023) 4. Multiple waves	Nominal	Questionnaire
Economic problem	Financial difficulties resulting from the pandemic	1. Present 2. Absent	Nominal	Questionnaire
History of mental illness	Previous treatment by a psychiatrist for a mental disorder	1. Present 2. Absent	Nominal	Questionnaire
Use of alcohol/ addictive substance	Consumption of alcohol or other addictive substances during the pandemic	1. Yes 2. No	Nominal	Questionnaire
Loss of family/ relatives	Loss of spouse, parent, sibling, or friend due to the pandemic	1. Experienced loss 2. No loss	Nominal	Questionnaire
Household conflict	Presence of conflict or disputes within the household during the pandemic	1. Present 2. Absent	Nominal	Questionnaire
Spirituality	Increase in religious or spiritual practices at home during the pandemic	1. Increased spirituality 2. No increase	Nominal	Questionnaire
Healthy eating pattern	Increased opportunity to adopt healthier	1. Improved healthy eating 2. No improvement	Nominal	Questionnaire

Variable	Definition	Indicator/ Category	Measurement Scale	Instrument
	eating habits during the pandemic			
Physical exercise	Increased physical activity due to more available free time during the pandemic	1. Increased exercise 2. No increase	Nominal	Questionnaire
Sleep pattern	Improvement in sleep quality through new work routines	1. Improved sleep pattern 2. No improvement	Nominal	Questionnaire
Adaptive coping mechanism	Activities undertaken to reduce or avoid stress by lowering demands, increasing resources, fostering positive thinking, or reducing emotional reactions to stress	Jalowiec Coping Scale total score categorized as: 1. Maladaptive = 25–61 2. Adaptive = 62–100	Ordinal	Jalowiec Coping Scale Questionnaire

RESULTS AND DISCUSSION

Demographic Data

The majority of participants in this study were female (73%). This finding is consistent with the studies of Javed and Parveen, which investigated adaptive coping strategies during the pandemic and also reported a predominance of female participants (50.4%).[12,13] Data collection in those studies was also conducted online. However, studies by Mazza et al. and Mikyung et al. reported different results, with most of their participants being male.[14–16] According to Green, women tend to participate more frequently in online surveys because they are generally more active consumers, more communicative, and more willing to share their opinions compared with men.[17–19]

The majority of participants were between 18 and 40 years old (89.7%). This is in line with previous findings by Javed and Parveen, who reported that 44.2% of participants were aged 18–25 years and 41% were aged 26–35 years, as well as the study by Kamaludin et al. in Malaysia, where 85% of respondents were 19–25 years old.[12,20] The most common level of educational attainment in this study was a Diploma or Bachelor's degree (77.5%). Furthermore, a considerable proportion of participants had experienced COVID-19

infection across more than one pandemic wave (36.0%). Notably, the majority of respondents demonstrated adaptive coping mechanisms (97.1%) in dealing with the COVID-19 pandemic.

Complete demographic and clinical characteristics of the study participants are presented in **Table 2**.

Table 2 Characteristics of respondents

Characteristic	Frequency (n)	Percentage (%)
Age group (years)		
18-40	339	89,7
41-60	39	10,3
>60	0	0
Sex		
Male	102	27
Female	276	73
Educational level		
Elementary-Junior High School	9	2,4
Senior High School	56	14,8
Diploma & Bachelor's Degree	293	77,5
Master's Degree or higher	20	5,3
COVID-19 Wave		
Wave I	60	15,9
Wave II	114	30,2
Wave III	68	18,0
Multiple waves	136	36,0
Coping Mechanism		
Adaptive	367	97,1
Maladaptive	11	2,9

Influence of Biopsychosocial Factors on Adaptive Coping Mechanisms

The logistic regression analysis (Table 3) demonstrated that sex was a significant predictor of adaptive coping mechanisms ($p = 0.029$). This finding aligns with previous research by Chankasingh et al., which reported that women were less likely than men employ adaptive coping strategies.[7]

Table 3 Result of logistic regression analysis

Variable	B	p-value	Exp(B)	95% CI *for* EXP(B)	
				Lower	*Upper*
Age	-18.145	.998	.000	.000	.
Sex	-1.497	.029	.224	.059	.855
Educational level	-.038	.957	.963	.243	3.809
COVID-19 wave	-.201	.523	.818	.442	1.513
Economic problem	-.404	.572	.667	.164	2.709
History of mental illness	-2.002	.039	.135	.020	.900
Alcohol/ addictive substance use	-2.572	.027	.076	.008	.750
Loss of family/ relatives	.778	.326	2.178	.460	10.302
Household conflict	.102	.926	1.108	.127	9.664
Spirituality	-1.072	.264	.342	.052	2.249
Healthy eating pattern	-.036	.969	.964	.155	5.988
Physical exercise	.264	.748	1.303	.260	6.531
Sleep pattern	-.579	.427	.560	.134	2.339

Women are known to have a higher prevalence of mental disorders—such as mood disorders, anxiety, and substance use—than men.[21,22] Differences in mental health outcomes may also be influenced by societal structures, including gender-based wage gaps and expectations for women take on greater caregiving responsibilities, as well as life-course factors such as pregnancy and motherhood. Poorer mental health outcomes, combined with social pressures, may lead women to adopt more adaptive coping mechanisms than men in order to achieve comparable well-being. Although literature specifically addressing sex differences in coping strategies remains limited, women are more likely to seek social support to manage mental health problems such as depression. Given the rising prevalence of loneliness among women during various phases of the COVID-19 pandemic, it is reasonable to expect that women faced greater challenges in employing effective coping strategies.[23]

Logistic regression analysis in the present study showed that age was not significantly associated with adaptive coping. In contrast, Javed and Parveen reported significant associations between coping strategies and variables such as age, religion, educational background, marital status, employment status, and cohabitation with family. Age was found to significantly influence both "conscious way of living" and "escape" as coping strategies, with individuals aged 18–25 years more likely to use these approaches.[12] Chankasingh et al. further observed that older adults tend to

employ more effective, problem-focused coping mechanisms, whereas younger adults are more inclined toward avoidance or substance use.[7] During the pandemic, older adults demonstrated greater resilience, self-reflection, and cognitive reframing as coping mechanisms. It is plausible that younger adults may not yet have developed equally effective adaptive coping strategies when confronted with a crisis of this magnitude.[24]

This study also found that alcohol or other substance use had a significant effect on adaptive coping (p = 0.027). This finding aligns with Muslimah et al., who reported that many individuals consumed alcohol or drugs as a means of escape during the pandemic. Interview findings and field observations revealed that some COVID-19 survivors used physician-prescribed medications, while others excessively consumed antidepressants to relieve stress. Studies conducted at the United States likewise indicate that individuals with a history of substance misuse who became infected with COVID-19 experienced poorer health outcomes than the general population.[8]

Previous research has confirmed that a history of mental illness can worsen under the stress of the COVID-19 pandemic. According to Alhadi et al., the emotion-focused coping subscale of the Brief COPE correlated strongly and positively with all measures of mental health symptoms and insomnia, while problem-focused coping showed a weak negative correlation with depression.[25] In the present study, a history of mental illness was likewise associated with a significantly lower likelihood of using adaptive coping strategies (p = 0.039; B = –2.002).

This study has several limitations. The predominance of female respondents limits the generalizability of the findings to the wider population. Furthermore, the cross-sectional design did not allow for analysis of potential mediation or indirect effects among variables. Cultural factors may also have functioned as confounders.

CONCLUSION

Among 378 COVID-19 survivors in Surakarta, sex, history of mental illness, and alcohol or substance use were identified as significant factors influencing adaptive coping mechanisms. Future research should incorporate more diverse demographic and cultural characteristics to better represent the general population and is recommended to employ multicenter study designs with larger sample sizes and longer follow-up periods.

CONFLICT OF INTEREST

The authors declare no conflicts of interest related to this manuscript.

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REFERENCES

1. Pelayanan Kesehatan Di Masa Pandemi P, Halim Sukur M, Kurniadi B, Faradillahisari RN. *Covid-19 Dalam Perspektif Hukum Kesehatan*. Vol 1.; 2020.

2. Yu P, Zhu J, Zhang Z, Han Y. A familial cluster of infection associated with the 2019 novel coronavirus indicating possible person-to-person transmission during the incubation period. *Journal of Infectious Diseases*. 2020;221(11):1757-1761. doi:10.1093/infdis/jiaa077

3. Mazza MG, Palladini M, De Lorenzo R, et al. Persistent psychopathology and neurocognitive impairment in COVID-19 survivors: Effect of inflammatory biomarkers at three-month follow-up. *Brain Behav Immun*. 2021;94:138-147. doi:10.1016/j.bbi.2021.02.021

4. Taquet M, Luciano S, Geddes JR, Harrison PJ. Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62 354 COVID-19 cases in the USA. *Lancet Psychiatry*. 2021;8(2):130-140. doi:10.1016/S2215-0366(20)30462-4

5. Manning K, Zvolensky MJ, Garey L, Long LJ, Gallagher MW. The explanatory role of fatigue severity in the relation between COVID-19 perceived stress and depression, anxiety, and panic severity. *Cogn Behav Ther*. 2022;51(2):89-99. doi:10.1080/16506073.2021.1874503

6. Mazza MG, Palladini M, De Lorenzo R, et al. One-year mental health outcomes in a cohort of COVID-19 survivors. *J Psychiatr Res*. 2022;145:118-124. doi:10.1016/j.jpsychires.2021.11.031

7. Chankasingh K, Booth A, Albert A, et al. Coping during the COVID-19 pandemic: A mixed methods approach to understand how social factors influence coping ability. *Heliyon*. 2022;8(10). doi:10.1016/j.heliyon.2022.e10880

8. Muslimah AH, Prihatin Idris F, Asrina A. Emotional Focused

Coping on COVID-19 Survivors During Isolation in a Rural Area in Indonesia. *Journal of Aafiyah Health Research (JAHR) 2021*. 2(2):14-20. doi:10.52103/jahr.v2i2.590

9. Gurvich C, Thomas N, Thomas EHX, et al. Coping styles and mental health in response to societal changes during the COVID-19 pandemic. *International Journal of Social Psychiatry*. 2021;67(5):540-549. doi:10.1177/0020764020961790

10. Gerhold L, Wahl S, Kröling S, et al. *COVID-19: Risk Perception and Coping Strategies. Results from a Survey in Germany*.

11. Fridolin Simak V. Tingkat Pengetahuan Dan Strategi Koping Masyarakat Indonesia Menghadapi Pandemi Covid-19 The Level Of Knowledge And Coping Strategies Of Indonesian Facing The COVID-19 Pandemic. *Jurnal Ilmiah Keperawatan Imelda*. 2020;6(2). http://jurnal.uimedan.ac.id/index.php/JURNALKEPERAWATAN

12. Javed S, Parveen H. Adaptive coping strategies used by people during coronavirus. *J Educ Health Promot*. 2021;10(1). doi:10.4103/jehp.jehp_522_20

13. Humayun A, Khan MA. *Journal of Arts and Social Sciences Dwelling in Shelter Homes: Personality Dispositions, Coping Mechanisms and Depression*. https://ojs.jass.pk

14. Mazza C, Ricci E, Biondi S, et al. A nationwide survey of psychological distress among italian people during the covid-19 pandemic: Immediate psychological responses and associated factors. *Int J Environ Res Public Health*. 2020;17(9). doi:10.3390/ijerph17093165

15. Gu M, Woo H, Sok S. Factors influencing coping skills of middle-aged adults in COVID-19, South Korea. *Front Public Health*. 2024;12. doi:10.3389/fpubh.2024.1248472

16. Alabi DL, Alao OT, Famakinwa M, Ogunleke TR. Gender Assessment of Coping Strategies Adopted by Rural Households During Economic Recession: A Case of Osun State, Nigeria. *Contemporary Agriculture*. 2020;69(3-4):81-89. doi:10.2478/contagri-2020-0011

17. Becker R. Gender and Survey Participation. An Event History Analysis of the Gender Effects of Survey Participation in a Probability-based Multi-wave Panel Study with a Sequential Mixed-mode Design. *Methods, Data, Analyses*. 2022;16(1):3-32. doi:10.12758/mda.2021.08

18. Rodriguez-Vega B, Palao Á, Muñoz-Sanjose A, et al. Implementation of a Mindfulness-Based Crisis Intervention for Frontline Healthcare Workers During the COVID-19 Outbreak in a Public General Hospital in Madrid, Spain. *Front Psychiatry*. 2020;11. doi:10.3389/fpsyt.2020.562578

19. Lai AY kwan, Sit SM man, Lai TT kwan, et al. Facemask Wearing Among Chinese International Students From Hong Kong Studying in United Kingdom Universities During COVID-19: A Mixed Method Study. *Front Psychiatry*. 2021;12. doi:10.3389/fpsyt.2021.673531

20. Kamaludin K, Chinna K, Sundarasen S, et al. Coping with COVID-19 and movement control order (MCO): experiences of university students in Malaysia. *Heliyon*. 2020;6(11). doi:10.1016/j.heliyon.2020.e05339

21. Eid RS, Gobinath AR, Galea LAM. Sex differences in depression: Insights from clinical and preclinical studies. *Prog Neurobiol.Elsevier Ltd*. 2019;176:86-102. doi:10.1016/j.pneurobio.2019.01.006

22. Stanton AM, Batchelder AW, Kirakosian N, et al. Differences in mental health symptom severity and care engagement among transgender and gender diverse individuals: Findings from a large community health center. *PLoS One*. 2021;16(1 January). doi:10.1371/journal.pone.0245872

23. Brotto LA, Chankasingh K, Baaske A, et al. The influence of sex, gender, age, and ethnicity on psychosocial factors and substance use throughout phases of the COVID-19 pandemic. *PLoS One*. 2021;16(11 November). doi:10.1371/journal.pone.0259676

24. Minahan J, Falzarano F, Yazdani N, Siedlecki KL. The COVID-19 Pandemic and Psychosocial Outcomes Across Age Through the Stress and Coping Framework. *Gerontologist*. 2021;61(2):228-239. doi:10.1093/geront/gnaa205

25. AlHadi AN, Alarabi MA, AlMansoor KM. Mental health and its association with coping strategies and intolerance of uncertainty during the COVID-19 pandemic among the general population in Saudi Arabia: cross-sectional study. *BMC Psychiatry*. 2021;21(1). doi:10.1186/s12888-021-03370-4