Anxiety Levels and Coping Strategies in Indonesian General Population During Early Stages of COVID-19 Pandemic

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Submitted: 3 March 2023. Accepted: 12 July 2023. Published: 5 August 2023
Volume 31, 2023. pp. 814–831. http://doi.org/10.25133/JPSSv312023.045

Abstract

This study aims to determine the anxiety-related coping strategies used by the general population in Indonesia during the COVID-19 pandemic. A cross-sectional study was conducted online in 34 Indonesian provinces on May 2–4, 2020, during the COVID-19 pandemic. A total of 2189 respondents aged 15-year-olds and older participated in this study. The Lime survey application platform and social media distributed the questionnaires. Multiple multinomial logistic analysis was performed to calculate the adjusted odds ratio (aOR) of coping activities with anxiety levels after adjusting for age, sex, marital status, education, occupation, and homeownership. Moderate and severe anxiety was more experienced by respondents aged 15–24 years, were female, not/unmarried, had middle-high education, were getting layoff, and lived in an employer-provided residence. Spiritual activity (aOR = 0.30; 95% CI [0.10, 0.87]; p = .027), physical activities (aOR = 0.28; 95% CI [0.16, 0.50]; p < .001), and leisure activities (aOR = 0.25; 95% CI [0.14, 0.46]; p < .001) provided the best protection against severe anxiety. In contrast, those who smoked cigarettes and consumed alcohol were more likely to experience mild-to-severe anxiety (aOR = 2.77; 95% CI [1.1, 6.64]; p = .022). Interestingly, those who shared their problems with others were more likely to experience mild anxiety (OR = 1.98; 95% CI [1.52, 2.58]; p < .001). Spiritual, physical, and leisure activities are expected to be associated with mild, moderate, and severe anxiety. Promoting physical, leisure, and spiritual activities plays a vital role in the community as a coping strategy for stressful times, especially during pandemics.

Keywords

Anxiety; coping strategies; COVID-19; Indonesia

Introduction

The coronavirus disease (COVID-19) is one of the most terrible natural disasters of the twenty-first century. Following the spread of the virus, the World Health Organization (WHO) (2020) announced COVID-19 as a global pandemic on March 11, 2020. COVID-19 is one of the most tragic events in human history, with 3,917,366 cases identified and 274,361 cumulative deaths worldwide on May 10, 2020. Indonesia is one of the countries affected by the COVID-19 outbreak, with a relatively high number of infected people. According to national data on May 5, 2020, the number of positive cases in Indonesia was 12,071 and 872, respectively (Indonesia Ministry of Health, 2020).

The COVID-19 pandemic could generate alarms because of the exceptionally high morbidity and mortality and adopted public health precautions. For example, isolation, quarantine, social distancing, and community containment may have adverse social and economic implications and public health concerns (Vogel et al., 2022). The consequences of social restrictions include job loss, reduced income, separation from the family, future educational uncertainties, and fear of being exposed to the virus, making people feel depressed (Faulkner et al., 2020). Along with social restrictions, the high number of infections and fatalities has raised global awareness of anxiety that, according to the WHO, are reasonable psychological responses to the socio-environmental changes (Kluge, 2020).

Anxiety is a prevalent mental health problem during disasters (Fergusson et al., 2014). One study showed that activity restriction was associated with anxiety onset and reduced quality of life (Ferreira et al., 2021). Another study described the psychological impact of COVID-19 as having caused a 16–28% increase in anxiety symptoms in the general population since the early stages of the pandemic (Rajkumar, 2020). In Indonesia, one in five people experiences anxiety during the COVID-19 pandemic (Anindyajati et al., 2021). Another study showed that anxiety levels in the general population during the COVID-19 pandemic were 6.92% (Mubasyiroh et al., 2022). This anxiety is partly due to intolerance of uncertainty and negative perceptions of various uncertainties experienced by individuals regarding the COVID-19 pandemic (Yuniardi et al., 2021).

Some epidemiologists predict that COVID-19 will continue to affect societies until 2025 and beyond (Scudellari, 2020). Therefore, preparing for and mitigating the adverse psychological effects of COVID-1919 is crucial. Recognition of coping strategies that can protect mental health, promote resilience, and prevent distress under confinement conditions can aid in achieving this objective. Several studies have investigated how individuals handle and adapt to restrictions. Studies have found that those who actively face problems, avoid problems, are isolated from social activities, cry, engage in positive self-talk, spend more time outdoors, exercise more, perceive more social support, sleep better, and engage in religious activities or pray more frequently have more excellent adaptability scores (Killgore et al., 2020; Tamres et al., 2002). In addition, people often watch television, listen to music, sleep, do homework, and eat well as coping strategies to overcome anxiety during the COVID-19 pandemic (Sameer et al., 2020).

According to the conceptual framework of social determinants of health from WHO (Solar & Irwin, 2010), the environmental factors contributed to mental health during COVID-19 could include material circumstances like financial and job loss, working from home, restricted housing; behavioral and biological factors like lack of physical exercise, unhealthy diet, and

substance use; and psychosocial factors like fear of contracting COVID-19, lack of social support (Lotzin et al., 2020). Additionally, behavioral factors, such as engaging in physical exercise or substance use as coping strategies for pandemic-induced stressors, can mitigate or exacerbate the effects of pandemic-related stress on mental health (Allen et al., 2014).

Several studies have assessed psychological problems and coping strategies in Indonesia. According to a survey of government employees, the majority of respondents employed problem-focused coping strategies, such as listening to experts and following their advice, being cautious before committing, adhering to regulations, using masks and hand sanitizers to reduce COVID-19 transmission, and adapting to current conditions by altering lifestyles (Nurhayati et al., 2021). In the same study, 50% of respondents used emotion-focused coping by wishing the pandemic would end immediately and surrender to God. Another survey among university students in Jakarta concluded that most participants used problem-focused coping to maintain psychological problems and social support (Akbar & Aisyawati, 2021).

Moreover, a study involving 220 Indonesian participants revealed a statistically significant positive relationship between religious coping strategies and psychological distress. The study concluded that praying to God and believing that the current situation results from God's will are associated with greater psychological well-being among the participants (Saud et al., 2021). Although some research on psychological problems and coping strategies during COVID-19 has been conducted in Indonesia, few studies have explored coping strategies in the general Indonesian population. Therefore, this study aimed to identify the anxiety coping strategies used by the general population of Indonesia during the COVID-19 outbreak. In the future, the study could have significant implications for acknowledging mental health conditions and promoting adaptive coping strategies to mitigate the impact of COVID-19 in the first month of COVID-19 social restriction.

Material and methods

Study design

This cross-sectional study was conducted online using a quantitative approach. This study was conducted in the first month after the early stages of large-scale social restrictions to control COVID-19 transmission in 34 provinces in Indonesia from May 2–4, 2020. The questionnaire is presented on the Lime Survey application platform, which generates a survey URL link distributed via social media (e.g., WhatsApp) to the key respondent by the provincial person in charge. Key respondents were colleagues of the researcher residing in a different province, and they were asked to share the link with the following eligible respondents: Additionally, due to minimize the selection bias, the research team explained the necessary selection criteria on the first page of the questionnaire before conducting the survey. A device's internet protocol (IP) address indicates whether respondents have completed the study. Respondents who attempt to complete the survey twice can be prevented from completing it by the system detecting their IP addresses.

Study population and sample size

The study participants were the Indonesian population aged 15 years and over (no upper age limit) who lived in Indonesia during the pandemic, had social media (WhatsApp), and were

willing to complete the survey questionnaire. Before the start of the study, the minimum sample size was calculated as 1,200 using the proportion estimation formula with a proportion for anxiety conditions (p = 35.1%) (Huang & Zhao, 2020); 95% confidence interval; deff = 2.

Procedures

An online survey was used to gather information, and it was sent out randomly to selected contacts in each of Indonesia's 34 provinces before being distributed via WhatsApp group. In addition, the eligibility criteria are applied equally to all prospective respondents regardless of the type of work, gender, race, and history of psychiatric problems. So that all prospective respondents have the same opportunity to fill out the survey link. The survey was not mandatory, and the participants could stop anytime. This clause was made explicit during informed consent at the start of the online survey page. Each item in the survey had several possible answers displayed next to it. Each question topic was given its page while the survey screen display was created. Participants could then select the response options that best described their situation by clicking on them. Before the survey was sent, the respondents could change their replies.

Study variables

All respondents were asked to complete a questionnaire on their demographic characteristics, anxiety, and types of coping strategies. Information bias has also been appropriately minimized in this study, where each question-and-answer choice in the survey link has been defined in detail so that respondents are less likely to misinterpret the meaning of the questions. In addition, the instruments in this study have been tested for validity and reliability so that the instrument is believed to be able to measure objects correctly. The overall reliability of the questionnaire was good ($\alpha = 0.72$).

Demography

The six demographic questions compiled by the researcher allowed us to investigate the respondents' demographic characteristics. Demographic characteristics included age, sex, marital status, educational status, working status, and homeownership status. The study included homeownership because it could reflect wealth status (Wainer & Zabel, 2020).

In detail, educational status is divided into two categories: “Low education” (not/not yet attending school, not graduating from elementary school, graduating from elementary school, and graduating from junior high school) and "Middle-high education” (high school, diploma, and bachelor degree). Meanwhile, in terms of working status, the categories were layoff (someone who was laid off due to/during the pandemic), unemployed (non-working individuals, including stay-at-home mothers), informal employment (who do not have regular monthly income), still in formal education (respondents who remain in school), and formal employment (persons with a regular monthly income, including government employees, private workers, and retirees). Homeownership was categorized as employer-provided, private, family-owned, and lease/contract residences.

Types of coping strategies

Coping is a cognitive or behavioral strategy for dealing with distressing situational demands (Zimmer-Gembeck & Skinner, 2016). Multiple stressors in a pandemic or epidemic necessitate specific coping skills, such as physical distancing measures, establishing healthy lifestyle behaviors and daily structures, or pursuing social support. During the early stages of the COVID-19 pandemic, researchers discovered associations between adaptive coping and decreased anxiety and depressive symptoms (Fullana et al., 2020). Using questionnaires with many items during a pandemic may be challenging because online assessment is necessary.

In this study, coping strategies were described in detail using concrete, easily understood examples of their use by the general public. This is because our research participants are members of the general public from diverse backgrounds who fill out online questionnaires themselves. These options were chosen based on prevalent behaviors and coping strategies endorsed by the general population (Prowse et al., 2021; Sameer et al., 2020) and Indonesia during the COVID-19 pandemic (Saud et al., 2021).

The question related to coping strategies was, "What actions do you take to maintain mental health during the COVID-19 outbreak, including complaints of sleep disturbances, anxiety, or depression? (More than one response is allowed)". Respondents answered each question with YES or NO and could answer more than one answer. The options for activities included exercise or physical activities, spiritual activities (worship, prayer, dhikr, meditation, etc.), leisure activities or enjoyable activities while not working or studying (doing hobbies, watching movies, gardening, etc.), cigarette smoking, alcohol consumption, consultation with formal health professionals (doctors, psychiatrists, psychologists), consultation with non-medical personnel (spiritual teachers, Islamic teachers, pastors, priests, etc.), and sharing problems with partners/family/friends.

Anxiety

Anxiety was measured using the Generalized Anxiety Disorder 7 item (GAD-7) by Spitzer et al. (2006). Evidence supporting the use of the GAD-7 as a brief anxiety measure has recently been reviewed (Kroenke et al., 2010). This study was used in this Indonesian-adapted GAD-7. It has been demonstrated that, when used in the general population of Indonesia during the COVID-19 period, the GAD-7 instrument has a very high level of internal reliability between 0.81–0.88 (Idaiani et al., 2021; Nazari et al., 2021). The GAD-7 comprises seven items regarding the respondents' conditions for the past two weeks. The instrument had been previously validated; Questions include "I feel restless, anxious, or agitated," "I am unable to stop or control my worrying," "I worry too much about things," "I find it difficult to relax," and "I am so restless that it is difficult to sit still," "I become easily irritated or irritable," "I feel scared as if something terrible might happen." Each question had four answers on a Likert scale ranging from 0 to 3.

The anxiety level was divided into four categories based on the sum of all items; the minimum category was for respondents with a total score of 0–4; the mild category for a total score of 5–9; moderate for a total score of 10–14; and severe for a total score of 15 and over. In this study, the reliability of the GAD-7 was 0.78.

Statistical analysis

The relationship between characteristics and the type of stress-coping strategies on anxiety level symptoms was cross-tabulated with the chi-square test. The chi-square test was used to determine the percentage of the distribution of each category of characteristics and type of stress-coping strategies on anxiety level symptoms. The chi-square test assesses the relationship between each characteristic and strategic coping with anxiety symptoms. Statistical significance was set at $p < .05$, with a 95% confidence interval.

Each stress-coping strategy and all demographic variables with a p value < .25 were included in the multivariate model. In addition, multiple multinomial logistic regression analysis was used to examine the association between types of coping strategies and anxiety levels. The odds ratio (OR) was adjusted for demographic characteristics, selected by the backward elimination method with a p value of < .05, considered statistically significant. The adjusted odds ratio (aOR) for the types of coping strategies with anxiety levels are shown in Table 3. Statistical analysis was performed using SPSS version 22.0.

Ethical statement

This study was conducted in accordance with the Research Ethics Commission's research protocol. Ethical approval was provided by the Health Research Ethics Commission, Health Research and Development Agency (KEPK-BPPK) (No. LB.02.01/2/KE.326/2020). The questionnaire was then distributed to the respondents, which included an explanation of the research purpose and an online consent form that respondents could read.

Results

This study obtained 2,189 respondents who completed the questionnaire. As shown in Table 1, the minimum, mild, moderate, and severe anxiety levels were 66.0%, 27.1%, 4.2%, and 2.7 %, respectively. Table 1 also describes the distribution of the respondents based on their demographic characteristics and levels of anxiety. For example, respondents who experienced severe anxiety were higher among those aged 15–24 years (3.1%), females (2.8%), those not/unmarried (3.4%), middle-high education (2.8%), getting laid off to COVID-19 pandemic (5.6%), and living in an employer-provided residence (5.7%).

Table 2 describes the distribution of respondents according to the type of coping strategies and the level of anxiety. Among respondents who did not experience or had minimal anxiety levels, most liked physical activities (69.2%) and spiritual activities (66.6%), enjoyed leisure activities (67.4%), and were likely to share problems with partners/family/friends (74.7%).

Table 1: Distribution of Respondents Based on Demographic Characteristics and Anxiety Level

Variables	*N* total (2,189)	Anxiety Levels				*p* value
		Minimal 1,444(66.0)	Mild 593(27.1)	Moderate 92(4.2)	Severe 60(2.7)	
Age (year)						< .001*
15–24	606(27.7)	407(67.2)	148(24.4)	32(5.3)	19(3.1)	
25–44	1,161(53.0)	719(61.9)	361(31.1)	50(4.3)	31(2.7)	
> = 45	422(19.3)	318(75.4)	84(19.9)	10(2.4)	10(2.4)	
Sex						< .001*
Female	1,486(67.9)	933(62.8)	434(29.2)	78(5.2)	41(2.8)	
Male	703(32.1)	511(72.7)	159(22.6)	14(2.0)	19(2.7)	
Marital status						.283
Not/unmarried	983(44.9)	645(65.6)	259(26.3)	46(4.7)	33(3.4)	
Married	1,206(55.1)	799(66.3)	334(27.7)	46(3.8)	27(2.2)	
Education						.027*
Middle-high	2,103(96.1)	1,375(65.4)	580(27.6)	90(4.3)	58(2.8)	
Low	86(3.9)	69(80.2)	13(15.1)	2(2.3)	2(2.3)	
Working status						.003*
Laid off due to pandemic	161(7.4)	90(55.9)	56(34.8)	6(3.7)	9(5.6)	
Unemployed	379(17.3)	230(60.7)	115(30.3)	17(4.5)	17(4.5)	
Informal employment	92(4.2)	67(72.8)	22(23.9)	1(1.1)	2(2.2)	
formal education	432(19.7)	296(68.5)	103(23.8)	19(4.4)	14(3.2)	
Formal employment	1,125(51.4)	761(67.6)	297(26.4)	49(4.4)	18(1.6)	
Homeownership						< .001*
Employer-provided residence	53(2.4)	219(59.5)	111(30.2)	17(4.6)	21(5.7)	
Private residence	853(39.0)	583(63.7)	263(28.7)	42(4.6)	27(3.0)	
Family-owned	915(41.8)	34(64.2)	15(28.3)	2(3.8)	2(3.8)	
Lease/contract	368(16.8)	608(71.3)	204(23.9)	31(3.6)	10(1.2)	

*Note: *Statistically significant, p value < .05 with chi-square test*

Table 2: Distribution of Respondents by Type of Coping and Level of Anxiety

Variables	N total (2,189)	Anxiety Levels				*p* value
		Minimal 1,444(66.0)	Mild 593(27.1)	Moderate 92(4.2)	Severe 60(2.7)	
Physical activity						< .001*
No	331(15.1)	159(48.0)	126(38.1)	24(7.3)	22(6.6)	
Yes	1,858(84.9)	1,285(69.2)	467(25.1)	68(3.7)	38(2.0)	
Spiritual activity						.002*
No	63(2.9)	28(44.4)	25(39.7)	5(7.9)	5(7.9)	
Yes	2,126(97.1)	1,416(66.6)	568(26.7)	87(4.1)	55(2.6)	
Leisure activity						< .001*
No	247(11.3)	136(55.1)	73(29.6)	19(7.7)	19(7.7)	
Yes	1,942(88.7)	1,308(67.4)	520(26.8)	73(3.8)	41(2.1)	
Medical consultation	.524					
No	1,918(87.6)	1,264(65.9)	526(27.4)	78(4.1)	50(2.6)	
Yes	271(12.4)	180(66.4)	67(24.7)	14(5.2)	10(3.7)	
Non-medical consultation	.137*					
No	1,890(86.3)	1,258(66.6)	501(26.5)	83(4.4)	48(2.5)	
Yes	299(13.7)	186(62.2)	92(30.8)	9(3.0)	12(4.0)	
Sharing problems						< .001*
No	491(22.4)	367(74.7)	88(17.9)	21(4.3)	15(3.1)	
Yes	1,698(77.6)	1,077(63.4)	505(29.7)	71(4.2)	45(2.7)	
Smoking and/or alcohol drinking						.037*
No	1,990(90.9)	1,328(66.7)	527(26.5)	85(4.3)	50(2.5)	
Smoking and or alcohol drinking	199(9.1)	116(58.3)	66(33.2)	7(3.5)	10(5.0)	

*Note: * p value < .25 and entered into multivariate analysis*

Table 3 shows the aORs for the association between coping strategies and mild, moderate, and severe anxiety levels. Those who lack spiritual, physical, and leisure activities tend to experience anxiety at all levels (mild/moderate/severe). Spiritual activities had a significant association with a lower risk of mild anxiety (aOR = 0.45; 95% CI [0.25, 0.79]; p = .006) and severe anxiety (aOR = 0.30; 95% CI [0.11, 0.87]; p = .027). Physical activities had a significant association with a lower risk of mild anxiety (aOR = 0.50; 95% CI [0.38, 0.65]; p < .001), moderate anxiety (aOR = 0.45; 95% CI [0.27, 0.75]; p = .002), and severe anxiety (aOR = 0.2828; 95% CI [0.16, 0.50]; p < .001). Leisure activities had a significant association with a lower risk of moderate anxiety (aOR = 0.38; 95% CI [0.22, 0.67]; p < .001) and severe anxiety (aOR = 0.25; 95% CI [0.14, 0.46]; p < .001).

On the other hand, cigarette smoking and/or alcohol consumption were associated with a higher risk of moderate and severe anxiety levels (aOR = 2.47; 95% CI [0.96, 6.36]; p = .062). There was no association between sharing problems and anxiety symptoms at a moderate level (Table 3). Due to a lack of reporting, the researcher recategorized smoking cigarettes and drinking alcohol as coping mechanisms. Moreover, both coping strategies were maladaptive coping strategies. Therefore, the re-category included code "0" for respondents who had cigarette smoking or consumed alcohol or did both and "1" for respondents who had no cigarette smoking or consumed alcohol.

Table 3: Multivariate Analysis Between Types of Stress-Coping Strategies and Level of Anxiety Adjusted for Demographic Characteristics

Variables	Mild		Moderate		Severe	
	aOR (95% CI)	***p* value**	**OR (95% CI)**	***p* value**	**aOR (95% CI)**	***p* value**
Spiritual activities						
No	1 (reference)		1 (reference)		1 (reference)	
Yes	0.45 (0.25, 0.79)	.006*	0.36 (0.13, 1.02)	.054	0.30 (0.11, 0.87)	.027*
Physical activities						
No	1 (reference)		1 (reference)		1 (reference)	
Yes	0.50 (0.38, 0.65)	< .001*	0.45 (0.27, 0.76)	.002*	0.28 (0.16, 0.50)	< .001*
Leisure activities						
No	1 (reference)		1 (reference)		1 (reference)	
Yes	0.73 (0.53, 1.01)	.054	0.38 (0.22, 0.67)	.001*	0.25 (0.14, 0.46)	< .001*
Sharing problems						
No	1 (reference)		1 (reference)		1 (reference)	
Yes	1.98 (1.52, 2.58)	< .001*	1.16 (0.69, 1.94)	.582	1.26 (0.67, 2.36)	.476
Cigarette smoking and/or alcohol consumption						
No	1 (reference)		1 (reference)		1 (reference)	
Yes	2.05 (1.41, 2.97)	< .001*	2.47 (0.96, 6.36)	.062	2.77 (1.16, 6.64)	.022*

*Note: * Statistically significant, p value < .05. Adjustment for age, sex, marital status, education status, working status, and homeownership*

Discussion

Drawing data from a large online study, this study showed Indonesian people's anxiety levels and how they maintain mental health during the early months of COVID-19 social restrictions. To our knowledge, this is the first study to conduct a large amount of mental health research after the outbreak of the COVID-19 pandemic in Indonesia. The results showed that moderate-to-severe anxiety symptoms experienced by the general Indonesian population were approximately 6.9%. Similar results were found in other countries, such as China (8.8%) (Ran et al., 2020).

The study also revealed that coping strategies used by people with anxiety were exercise or physical activities, spirituality, leisure, talking to others, and consuming cigarettes or drinking alcohol. Our findings are consistent with those of previous studies. A study conducted in the United States found that religious coping with COVID-19 stress reduced the likelihood of experiencing anxiety. In contrast, alcohol or drug abuse, behavioral disengagement, and emotional support were associated with increased odds of COVID-19–related symptoms of anxiety (Okafor et al., 2022). On the other hand, a closer look at the population should be taken; individuals with and without mental illness utilize different adaptive coping strategies. Those with a mental illness were more likely to seek professional and online help, whereas those without a mental illness focused more on self-help (Meyer et al., 2022).

Physical activities

Physical activity appears to be consistent with coping strategies had lowered the risk of anxiety from mild, moderate, and severe levels. The study showed that physical activity reduces the odds of a subsequent diagnosis of any anxiety (McDowell et al., 2019). Physical activity is an effective coping strategy for increasing positive emotions, focusing, having a clearer mind, increasing self-confidence, and being proactive in solving problems (Kim & McKenzie, 2014). In addition, during the COVID-19 pandemic, a literature review revealed that exercise and physical activity are effective in maintaining or improving mental health (Ai et al., 2021). Furthermore, exercise has been shown to reduce inflammation through various mechanisms (inflammation, cytokines, toll-like receptors, adipose tissue, and vagal tone), helping patients with mood disorders have a better quality of life (Mikkelsen et al., 2017).

On the other hand, a study in Switzerland found that social restrictions during the COVID-19 pandemic increased physical inactivity, which is associated with poorer individual mental health status and physical health (Cheval et al., 2021). Less active individuals are twice as likely to experience stress (Vogel et al., 2022). Physical inactivity occurs because of social restrictions. According to another study, individuals who had never participated in physical activity before could experience adverse effects on subjective well-being when exercising during social isolation due to COVID-19; they may have felt "pressured" and uncomfortable engaging in physical activity, and they may not have received professional guidance during their training (de Abreu et al., 2022).

Leisure activities

In this study, leisure activities were shown to have the strongest association with anxiety due to becoming severe (aOR = 0.25). Leisure activities positively affect psychological health

(Ryerson, 2022) and are associated with better mental health, such as gardening at home and have also been shown to reduce anxiety and mental health problems such as depression and stress (Rodríguez-Rey et al., 2020; Sundara Rajoo et al., 2021). A happy feeling is essential for psychological well-being during social distancing (Güler & Haseki, 2021).

However, not all leisure activities are beneficial to mental health. One study showed that increased leisure screen time during COVID-19 could harm mental health, such as depression, stress, and anxiety (Jáuregui et al., 2022). Another study found that changes in leisure activities before and during COVID-19, such as outdoor and natural indoor activities, could also negatively impact mental health (Bae & Chang, 2023).

Spiritual activities

In addition to physical and leisure activities, spiritual activities were significantly associated with a lower risk of severe anxiety (OR = 0.30, 95% CI [0.10, 0.87]). Spiritual and religious activities are related to good mental health, such as being associated with lower anxiety levels and sadness and raising hope (Lucchetti et al., 2021). A study conducted in Indonesia showed that high anxiety levels were associated with low spirituality levels (Rias et al., 2020). Another study showed that religious activity among Hindus in Bali, Indonesia, was associated with lower perceptions of COVID-19 as a threat and better mental health (Sueca et al., 2021).

The neurobiological explanation given by a study that during stress conditions, whole-brain correlation analyses revealed a correlation between intrinsic spirituality and reduced activity in corticostriatal-limbic regions, such as the hippocampus, brain stem, thalamus, ventral striatum, orbitofrontal cortex, and ventromedial prefrontal cortex. Through a neurobiological mechanism, spirituality may protect against dysregulated stress responses and stress-related mental disorders (McClintock et al., 2019). Additionally, according to another study, increased activity of the prefrontal cortex resulting from prayer can improve cognitive control over emotions and help dissociate the memory of trauma from its associated emotions (Baldwin et al., 2016).

Spirituality is directly related to high expectations for positive conditions in the future and indirectly through individual self-efficacy in dealing with anxiety during the COVID-19 pandemic (Kasapoğlu, 2022). These results further emphasize the importance of spirituality or a higher connection with infinite substances (e.g., God) in managing mental health, which can be a valuable intervention in overcoming anxiety. Spirituality in dealing with mental health problems is an excellent opportunity for Indonesia, with a population that holds firmly to religion.

Cigarette smoking and alcohol consumption

Cigarette smoking and alcohol consumption have become alarming activities related to coping strategies. Cigarette smoking and alcohol consumption were likelier to be anxious, almost three times higher than those who did not consume cigarettes and alcohol. Another study on people over 21 in 34 provinces in Indonesia showed that most respondents experienced decreased alcohol and cigarette consumption (Hanafi et al., 2021). This decrease was due to social restrictions, which resulted in limited access to cigarettes and alcoholic beverages. However, despite a decline, consuming cigarettes and alcoholic beverages still contributes to mental health problems in Indonesia. According to a study conducted in Spain

(Martínez-Cao et al., 2021), tobacco and alcohol consumption are employed by the general population as coping mechanisms. The association between smoking or alcohol consumption and increasing anxiety is in line with other studies in New Zealand (Gasteiger et al., 2021). In addition, substance use often becomes self-medication for people with anxiety, and the prevalence is relatively high, almost a quarter of the general population (Turner et al., 2018). However, other studies also found that alcohol consumption was only associated with depression but not anxiety levels (Coakley et al., 2021). The relationship between cigarette smoking and alcohol consumption and mental health problems, or vice versa, has been widely studied but has shown mixed results. A systematic Mendelian randomization analysis showed a more robust and consistent relationship in which mental health increased substance use, but the relationship was weaker than the opposite (Treur et al., 2021). On the other hand, even though smoking was significantly associated with anxiety in people aged 18 to 49 years, it did not exhibit the exact correlation in those older than 50 years due to the critical age of mental health problems at a young age (Mojtabai & Crum, 2013).

Sharing problems

Sharing problems with partners/family/friends was associated with a lower anxiety risk, especially during the COVID-19 pandemic. Sharing problems with the closest peer is part of seeking social support. Moreover, sharing concerns will work if there is a quality emotional connection, including empathy, support or assistance, presence, and vulnerability. Usually, this emotional connection results from close relationships with family, friends, new people, or health workers (Bender et al., 2021). A study in India showed that COVID-19 patients who had close communication with family and friends had better anxiety levels and felt relieved (Patil et al., 2021). A review of several groups of nursing students also showed that sharing with others was a coping strategy that could reduce their anxiety levels (Majrashi et al., 2021). Another study showed that among older adults, contacting old friends who were rarely contacted before the pandemic was a coping strategy (Fuller & Huseth-Zosel, 2021). However, this was not the case for our respondents, where sharing problems with others could increase the risk of anxiety. This condition is thought to be due to many axes of information at the beginning of the COVID-19 wave in Indonesia. The Ministry of Communication and Information collected and checked 400 hoax news articles related to the coronavirus from early January to the end of March 2020. This figure is equivalent to six to seven hoaxes circulating daily during the first three months.

Additionally, circulating scam information about health problems makes people afraid and panicked (Rahmawati et al., 2021). Another misleading source comes from the fact that people are only interested in news headlines without reading the overall content of the news. This situation makes the spread of hoaxes through social media even faster (Mansur et al., 2021). Moreover, materials discussed between people may include hoaxes/fraud/scam information.

The absence of social support as an essential stress-buffering and health-promoting factor will likely impair the immune system, accelerating disease progression and enhancing pathogenicity. In addition, the pro-social, anti-inflammatory, and anti-stress properties of oxytocin in mediating the positive effects of social support could be beneficial (Gryksa & Neumann, 2022).

Promoting strategies that include physical, leisure, and religious/spiritual activities is crucial to help impacted groups and enhance community resilience and well-being.

Strengths and limitations

This study has provided valuable information; it was one of the most extensive population-based surveys conducted in Indonesia during the first month of COVID-19 social restrictions, providing valuable information about the psychological health of the Indonesian population; In addition, our study met the criteria for external validity by striving for and ensuring that the sample of respondents who receive the survey link is representative of the population we wish to examine according to study, based on the minimum sample calculation.

However, our study had some limitations to consider when interpreting our findings. First, it was a cross-sectional study, which could not draw a causal relationship. Second, our study used an online survey, which could limit participants' participation. Third, the study used convenience; high education sampling covered participants who could access this survey through the Internet, which could impact the generalizability of the findings. The respondents were also self-selected due to the snowball sampling process, which could relate to a lack of representativeness, which may be because participants were partly recruited from the researchers' network.

Furthermore, subjective bias can occur, as this survey used self-reported questionnaires, which could lead to underreporting of socially undesirable behavior. Additional representative studies on Indonesians are needed. Fourth, single-question measures of coping strategies were used. In future investigations, more complicated coping instruments are required. Another limitation was that the study could not perform normality data due to the categorical variables used. Finally, future research should investigate whether respondents also consumed any substances during the study period and determine the previous level of use (acceptable, dependent, or hazardous).

Acknowledgments

The authors would like to express gratitude to the Head of the National Institute of Health Research and Development, The Indonesian Ministry of Health, which allowed us to do the study.

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