



Research article

Psychological distress among Greater Jakarta area residents during the COVID-19 pandemic and community containment



Sylvia Detri Elvira ^a, Aly Lamuri ^{b,*}, Petrin Redayani Lukman ^a, Khamelia Malik ^a, Hamzah Shatri ^c, Murdani Abdullah ^c

^a Department of Psychiatry, Faculty of Medicine Universitas Indonesia, Indonesia

^b Indonesia Medical Education and Research Institute, Indonesia

^c Department of Internal Medicine, Faculty of Medicine Universitas Indonesia, Indonesia

ARTICLE INFO

Keywords:

Community quarantine
COVID-19
DASS-21
Psychological distress

ABSTRACT

Introduction: Coronavirus disease 2019 (COVID-19) is an emerging pandemic affecting the global population. Community-based quarantine can slow down the pandemic growth while adversely affecting population-wide psychological well-being. Affected psychological well-being could potentially influence population compliance in following stipulated community quarantine procedures.

Aim: The aim was to quantify psychological distress among Greater Jakarta area residents during the community containment period.

Objectives: The objective was to measure depression, anxiety, and stress levels using the Indonesian version of the DASS-21. Demographic data on sex, education strata, and working/productive-age group were also collected.

Methods: This cross-sectional observational analytic study employed an online questionnaire involving participants acquired through snowball sampling. The questionnaire comprises two parts: demographic data and psychological distress indicators. Linear regression evaluated psychological distress as a response variable.

Results: Among 1,205 women and 824 men, our findings suggested male sex, age in the range of 15-24 years, and having a bachelor's degree or professional qualification have a strong association with psychological distress.

Conclusion: By addressing the population at risk, policymakers can identify better countermeasures for preventing psychological distress.

1. Introduction

By the end of 2019, numerous pneumonia cases of unknown etiology appeared in Wuhan, a central transport hub city in China [1]. The Wuhan Municipal Health Commission promptly notified the National Health Commission (NHC), Chinese Center for Disease Control and Prevention (CCDC), as well as the World Health Organization (WHO) [2], raising the alert level for the outbreak. From January to March 2020, the outbreak rapidly spread into neighboring countries [3], with a total of 80,813 cases in mainland China and 21,110 in other countries around the world [1]. This highly virulent strain of pneumonia with previously unknown etiology [4] was termed Coronavirus Disease 2019 (COVID-19). COVID-19's potent virulence factor and rapid transmission have enabled it to spread globally. Because there is limited understanding about the pathogenicity of COVID-19 [5], restriction of social contact is essential to abate the progression of the pandemic [6].

Public health measures for managing the current situation stem from SARS and MERS pandemic. At an individual level, either isolation or quarantine will prevent the disease from spreading [7]. Isolation refers to the separation of healthy and infected subjects, while quarantine refers to movement restriction of high-risk subjects or those suspected of being at high risk [8]. Using fever surveillance [7, 9, 10] and active contact tracing [11] in conjunction with quarantine could assist with early detection and improved management plans. Community mitigation strategies for curbing viral transmission ideally involve drastic measures, ranging from social distancing to community-wide quarantine [7].

During the pandemic, growing concerns about viral transmission have led to increased awareness of social contact limitations [12, 13]. Currently, cases in Indonesia require drastic public health measures [14]. However, community-wide containment consequently disrupts population dynamics and creates economic disadvantage [8]. The

* Corresponding author.

E-mail address: aly.lamuri@ui.ac.id (A. Lamuri).

<https://doi.org/10.1016/j.heliyon.2021.e06289>

Received 3 August 2020; Received in revised form 30 October 2020; Accepted 10 February 2021

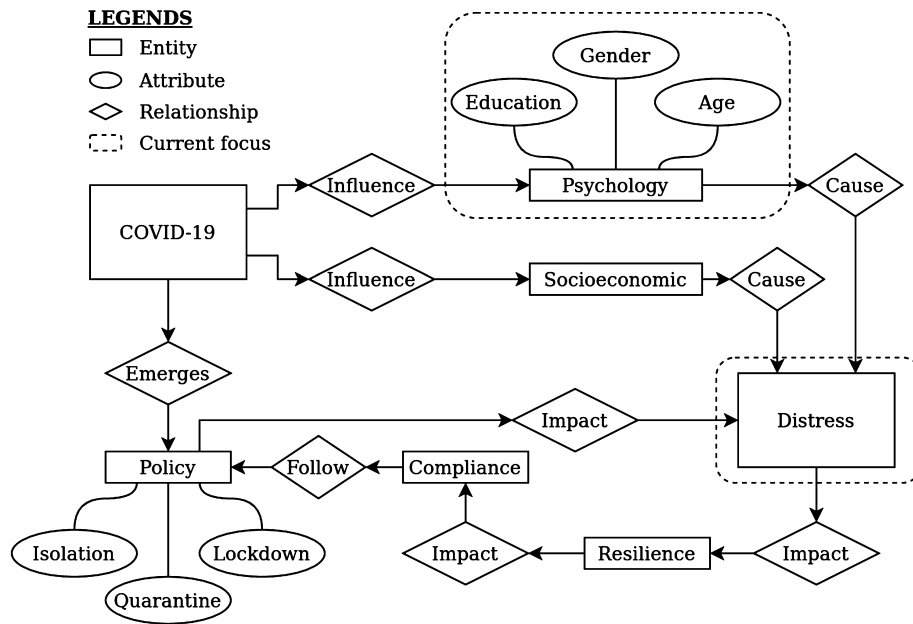


Fig. 1. Conceptual framework for the current investigation.

COVID-19 pandemic has brought about a severe economic burden, leading to a global crisis [15]. Reciprocally, socioeconomic status may affect people’s behavior; a population with high socioeconomic status scored well in knowledge, attitudes, and practices (KAP) toward COVID-19 [16]. This finding suggests that socioeconomic status affects the public’s acceptance of stipulated policy. Furthermore, psychological distress [17, 18] has been found to influence people’s compliance with quarantine [19].

Immediate psychological impacts during a pandemic include increased wariness and negative perceptions [20, 21], both in infected subjects and in populations at risk. When community-wide quarantine is imposed, people require increased psychological support [7]. Taiwan and Korea have effectively reduced the panic response by providing such support [20]. It is essential to question whether anxiety and depression may be aggravated by prolonged quarantine. Fig. 1 depicts the proposed conceptual framework, where the investigation focuses on psychological impact and distress during the pandemic.

In the Greater Jakarta area, the effects of the pandemic and quarantine on residents remain unknown. The Greater Jakarta area is a central transport hub with multiethnic residents and different levels of socioeconomic status. This study used the Depression, Anxiety and Stress Scale (DASS-21) to measure the effects of prolonged quarantine on residents, taking into account sociodemographic factors. It was hypothesized that sex, socioeconomic status, and educational strata would influence perceived distress.

2. Methods

2.1. Study design

This observational analytic study assumed a cross-sectional design. Only people residing in the Greater Jakarta area, including Jakarta, Bogor, Depok, Tangerang, and Bekasi, were included in the study. The Ethical Committee from the Faculty of Medicine Universitas Indonesia granted ethical clearance to conduct this investigation. Participants expressing electronic informed consent were at least 18 years old and provided information on their sex, age, and educational background as part of the demographic data. The age variable was grouped into 15-24, 25-44, 45-64, and 65+ based on labor force participation as stipulated by the United Nations [22].

To preserve representativeness and proportionality, we divided educational strata into three groups. Group I comprised respondents who had graduated from elementary school up to those who had an associate degree. Group II consisted of participants with either a bachelor’s or professional qualification. Those with a master’s, Ph.D., or postdoctoral degree were put in Group III.

Data were gathered between April 23 and May 4, 2020, from the general population residing in the Greater Jakarta area. The questionnaire included an Indonesian translation of the DASS-21 [23] to measure psychological distress. Because Indonesia has yet to establish a representative internet panel, this study applied relaxed inclusion and exclusion criteria to obtain a representative sample of the general population. We only excluded subjects who did not complete the questionnaire or refused to participate.

2.2. Sampling procedures

We employed a snowball sampling method, where involved participants may share the questionnaire with other potential respondents. Initially, each investigator disseminated the questionnaire to their respective social media groups. We encouraged group members to share the questionnaire with wider audiences, including family members and colleagues.

2.3. DASS-21

The DASS-21 is a shorter version of the DASS-42, a psychometric instrument that aims to measure three dimensions of emotional distress, i.e. depression, anxiety, and stress. DASS-21 scores range from 0 to 3, with extremes being “not at all” and “most of the time,” respectively. Among Indonesian participants, the DASS-21 holds sufficient internal consistency in terms of detecting depression, anxiety, and stress, denoted by Cronbach’s alpha scores of 0.87, 0.85, and 0.72, respectively [24].

When interpreting the DASS-21, numerous conventions rely on the three-factor, two-factor, and one-factor models. In the three-factor (original) model [25], the DASS-21 evaluates depression, anxiety, and distress. In the two-factor model, the DASS-21 is considered to be an instrument to detect physiological hyperarousal and general negative affect [26]. The one-factor model generalizes all latent variables to describe psychological distress [27].

This study followed the three-factor model to provide a brief description of the prevalence of depressed, anxious, and stressed respondents. To make a further inference, we relied on the one-factor model to analyze how each potential variable contributed to psychological distress during the pandemic. The presence of multiple interpretations does not directly imply unreliable discriminant validity. Acute psychological stress may manifest as an overlapping state between depression and anxiety. We further tested this assumption by analyzing the correlation between each of the three factors.

2.4. Statistical analysis

In a large enough sample, performing a normality test poses a higher risk of type-I statistical error because a slight deviation from the normal distribution results in null-hypothesis rejections. With the convergence of a random variable into the normal distribution (central limit theorem), a large sample may receive parametric treatment in conducting further analysis.

Because a Likert scale may quantify uniformly constructed questionnaires, we consider the parametric test to be a suitable means to affirm significance with better statistical power [28]. As such, by dividing participants based on knowledge score, the DASS-21 scores were subjected to Welch’s t-test to measure the mean difference.

Analysis of variance (ANOVA) determined the mean difference among multiple groups (more than two). Tukey’s range test (Tukey’s HSD) signified a pairwise difference from assigned groupings. We applied Tukey’s HSD to minimize type-I statistical errors.

2.5. Multiple regression

Finally, a generalized linear model using the Gaussian family fitted a multivariable analysis with the square root of the DASS-21 score as the response variable. Calculating the variance inflation factor (VIF) provided a measure of multicollinearity, while the Harrison-McCabe test [29] determined the homogeneity of the residuals [30]. The regression model took into account the one-factor model of the DASS-21 [27], thus did not separate each subscale on its own. This method aimed to determine contributing factors to general psychological distress, where a higher score indicates greater distress. Predictors in the proposed model included sex, age group, and educational strata. Because all predictors were categorical variables, we set being male, aged 15-24 years old, and being in Group III as the reference (intercept).

3. Results

This study utilized the DASS-21 to measure psychological distress in 824 male and 1,205 female participants from 137 sub-districts in the Greater Jakarta area. On average, participants reported three hours spent outside the house per day (s: 4.14). There was no significant correlation between time spent outside and depression (r = -0.04, 95% CI: -0.08 to 0.01, p=0.1), anxiety (r=0, 95% CI: -0.05 to 0.04, p=0.93) or stress subscale (r = -0.01, 95% CI: -0.05 to 0.04, p=0.77). The median participant age was 32 (IQR: 21), with a range from 18 to 81 years old and a mean value of \bar{x} : 35.41 and s: 13.04. Of the participants, 447 (22.03%) had at most an associate degree, 1,130 (55.69%) had a bachelor’s or professional qualification, and 452 (22.28%) had a master’s, PhD, or postdoctoral degree. Table 1 shows the demographic characteristics of the participants.

3.1. DASS-21 internal consistency

The DASS-21 had acceptable internal validity, where items on each sub-scale consistently contributed to a particular measure. Raw Cronbach’s alpha scores for depressive, anxiety and stress subscales were 0.81, 0.74, and 0.8, with the standardized scores being 0.82, 0.75, and 0.8, respectively.

Table 1. Respondents demographic.

	Male	Female
Hours spent outside per day	\bar{x} :3.5 (s:4.37)	\bar{x} :2.66 (s:3.95)
Age	\bar{x} :38.1 (s:13.7)	\bar{x} :33.58 (s:12.24)
Age Group		
15-24	162	358
25-44	390	603
45-64	248	222
65+	24	22
Education		
Elementary school	2	3
Junior high school	14	9
Senior high school	127	135
Diploma	54	103
Bachelor’s	381	630
Professional degree	30	89
Master’s	182	205
Doctoral	28	30
Postdoctoral	6	1
Education Group		
Group I	197	250
Group II	411	719
Group III	216	236

Number of subjects for each variable, unless indicated otherwise

3.2. DASS-21 components

Most of the general population residing in the Greater Jakarta area perceived mild distress or none at all, indicated by a low DASS-21 score. Of the 2,029 participants, 7.98%, 11.82%, 2.17%, and 0.91% reported mild, moderate, severe, and extremely severe anxiety, respectively. Meanwhile, 9.62%, 7.54%, and 0.97% reported mild, moderate, and severe depressive symptoms. Only 6.54%, 2.44%, and 0.62% reported mild, moderate, and severe stress.

Pairwise comparison between each sub-scale of the DASS-21 presented a high correlation. Depression and anxiety were correlated, with r=0.67 (95% CI: 0.65-0.7), p<0.001. Depression also had a strong correlation with stress, where r=0.73 (95% CI: 0.71-0.75), p<0.001. Furthermore, anxiety and stress were correlated, with r=0.69 (95% CI: 0.67-0.71), p<0.001. The high correlation among all dimensions satisfied our assumption on overlapping states during acute distress. Thus, further analysis will follow the one-factor model [27] in delineating general psychological stress.

3.3. DASS-21 and related sociodemographic factors

DASS-21 scores differed between male and female participants; women perceived a greater degree of distress during the pandemic (\bar{x} : 17.94, s: 13.29) compared with men (\bar{x} : 13.05, s: 12.3); t(1740.69) = -8.2, p<0.001. As shown in Fig. 2, the mean difference is consistent among all DASS-21 components, and thereby in the total score.

When education levels were taken into account, statistically significant results were observed in psychological distress (ANOVA, F(2)=14.34, p<0.001). Post-hoc analysis on DASS-21 total scores with Tukey’s HSD revealed significant differences in a pairwise comparison, as shown in Fig. 3. Subjects in the Group III education stratum presented lower DASS-21 scores (\bar{x} :13.17, s:12.81) than those in Group II (\bar{x} :17.15, s:13.29) and Group I (\bar{x} :15.69, s:12.53).

Participants were classified by working/productive age into the following groups: 15-24, 25-44, 45-64, and 65+ years old. We found significant differences by age group across all DASS-21 components (ANOVA, F(3)=47.71, p<0.001). Fig. 4 indicates significant differences in DASS-21 total scores across working/productive-age groups of 15-24 (\bar{x} :19.34, s:13.3), 25-44 (\bar{x} :17.27, s:13.71), 45-64 (\bar{x} :10.39, s:9.72), and 65+ years (\bar{x} :9.11, s:8.36).

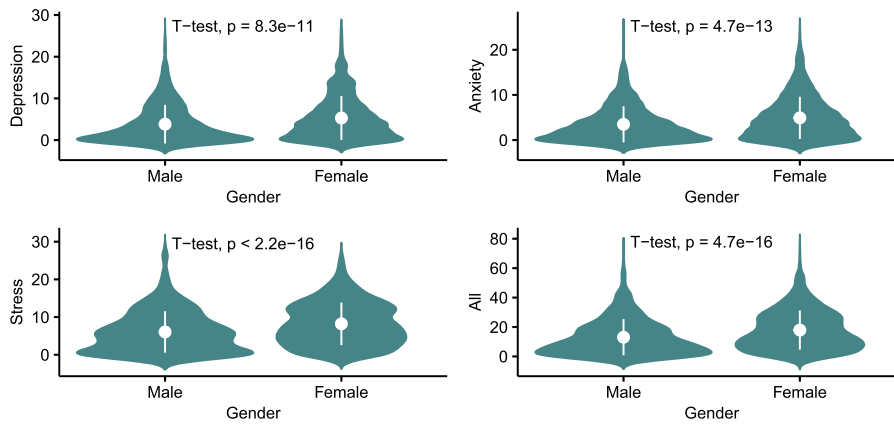


Fig. 2. DASS-21 scores across sex.

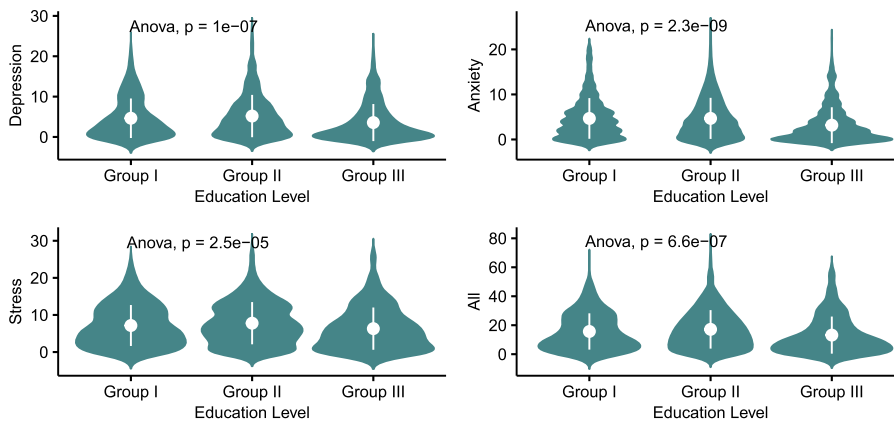


Fig. 3. DASS-21 scores across education strata.

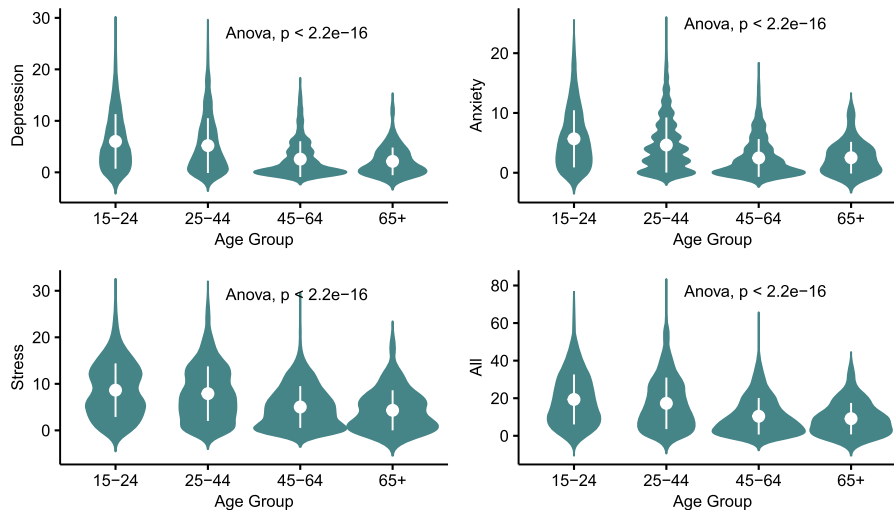


Fig. 4. DASS-21 scores across different working/productive ages.

3.4. Multiple regression model

As summarized in Table 2, there were significant results for women aged 25-44, 45-64, 65+, and Group II variables. Predicted by the model is a square root of the DASS-21 score. Transforming the total DASS-21 score was necessary to prevent overfitting in our model. The estimate column in Table 2 describes the extent to which a variable influenced the predicted value, with a positive estimate indicating a positive contribution and *vice versa*.

In our model, Male was used as the sex variable reference. Female sex contributed to a higher DASS-21 square-rooted score by 0.6 points. We used 15-24 years old as the age group reference, and found other age groups were less susceptible to an increase in DASS-21 score. For education level, we used Group III as the reference, and found that Group II had a notable contribution to a higher DASS-21 score.

Further analysis of variance on the given model yielded satisfactory results for sex ($F(1)=87.95, p<0.001$), age group ($F(3)=43.27$, and education level ($F(2)=3.53, p=0.03$). $VIF = \{1.03, 1.24, 1.22\}$ did not detect

Table 2. Summary of Generalized Linear Model with Maximum Likelihood Estimators.

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	3.530	0.143	24.606	<0.001
Female	0.604	0.083	7.262	<0.001
Age Group				
25-44	-0.308	0.106	-2.922	0.004
45-64	-1.164	0.127	-9.193	<0.001
65+	-1.380	0.278	-4.967	<0.001
Education				
Group I	-0.001	0.131	-0.011	0.991
Group II	0.219	0.105	2.076	0.038

multicollinearity in our model, whereas the Harrison-McCabe test confirmed homogeneous residuals variance (HMC: 0.51, $p=0.72$).

4. Discussion

The psychometric properties of the DASS-21 have received extensive examination, with a previous study concluding that it had acceptable convergent and discriminant validity [27]. Our survey found that 14% of the general population showed moderate to severe anxiety (11.82% moderate and 2.17% severe), a notably lower percentage than those in other studies employing the DASS-21 to measure distress during the COVID-19 pandemic [31, 32]. Coinciding with previous research, women and individuals with lower educational backgrounds tended to report more distress, as indicated by a higher prevalence of depressive symptoms [31, 33]. Younger participants in our study reported higher DASS-21 scores than older participants. Compared with other countries, the distress level among the general population in the Greater Jakarta area was not as alarming [31, 32].

Our findings supported prior studies, describing a disparity in negative percepts between sexes, where women are more susceptible to psychological distress [34, 35], even without accounting for unusual circumstances, e.g. the pandemic [36]. Psychological distress seen in women during the pandemic [37, 38] is further exacerbated by women and children being at the receiving end of domestic abuse. Women also tend to work longer hours than men. In addition to normal office hours, they are often responsible for household chores, resulting in at least 30 and 50 minutes more work in developed and developing countries, respectively [39].

Lower DASS-21 scores in individuals with higher education levels also support the findings of a previous study, suggesting a lower risk of depressive disorder among well-educated subjects [40]. A large population-based survey in China highlighted that education level influenced depression or anxiety risk [41] albeit the presence of intermediary variables between education and negative percepts, such as occupational factors [42] or discrimination [43]. Subjects with low levels of education potentially have a greater inclination toward anxiety [44] because they may struggle to understand information about the pandemic. In the current pandemic [45] and the previous epidemic [46], lower educational background consistently showed a detrimental effect on psychological well-being. Intervening variables should be considered when considering education impact on psychological well-being in unusual circumstances. These include situational comprehension, planning, and perception, as well as information discernment.

Our study showed lower total DASS-21 scores, suggesting lower psychological distress, among older participants. This is in contrast to prior evidence, which showed increased distress in older adults [17]. However, the demographics may differ between these studies; we investigated distress levels in healthy participants, whereas the previous study focused more on the psychological impact on COVID-19 patients. On the other hand, the tendency among younger people to become distressed during this period is consistent with Maslow's hierarchy of needs [47]. With the declining economy affecting overall job markets, working/productive-age individuals are at risk of being influenced by social

instability. As having a stable income becomes a part of physiological fulfillment, it may take precedence over fulfillment of security needs [47].

Considering the wide-ranging effects of COVID-19 currently reported worldwide, sustaining psychological well-being has become essential. Previous investigations have consistently shown that women and subjects with lower educational levels are more prone to distress. One mitigation strategy is to develop a centralized teleconsulting service [48].

4.1. Limitations

Because cross-sectional data only captures a snapshot at one point in time, the current investigation suffers from the lack of external validity. A longitudinal study is necessary to establish the impact of the COVID-19 pandemic over time. The lack of representative internet panels in Indonesia meant that the current investigation could not follow a random sampling method with fully matched participants nor address potential confounding factors. Employing a more advanced statistical strategy was not appropriate because of the small sample size. We cannot confidently conclude the causality of psychological distress associated with the pandemic, yet our findings show psychological distress in the early phase of the COVID-19 pandemic in Indonesia.

4.2. Future direction

We have agreed to publish our survey data in the public domain for future reference and further analysis [49]. Our study investigated a heterogeneous population in the Greater Jakarta area. Using snowball sampling, we were able to collect data representing a wide community; however, future studies would benefit from using a probabilistic sampling method and reaching a population of lower socioeconomic segments to provide better generalization. Our study provides a foundation for the design of a theoretical construct incorporating variables that influence psychological distress during adversity. Ideally, future investigations will define intervening variables into a structural equation model to confirm the current supposition.

5. Conclusion

We identified subgroups in the population with a higher tendency to perceive psychological distress during the pandemic. Female sex, being in the 15-24 age group, and having a low to moderate educational level were associated with having psychological distress. Considering the low VIF and failure to reject the null hypothesis in the Harrison-McCabe test, we believe our regression model provides a suitable reference for populations with a similar socio-demographic background. However, because our study did not utilize the non-probability sampling method and was not able to cover a population of lower socioeconomic segments, such generalization should be treated with caution. The preparation of countermeasures by policymakers on psychological distress could benefit the population during quarantine.

Declarations

Author contribution statement

S. D. Elvira, P. R. Lukma, H. Shatri: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data.

A. Lamuri: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

K. Malik: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

M. Abdullah: Conceived and designed the experiments.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability statement

Data associated with this study has been deposited at Mendeley - <https://data.mendeley.com/datasets/j2ky9mj2bd/1>.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

Acknowledgements

The authors would like to extend their gratitude to Reinaldo L. Pereira, Georgi Ichov, Golderick Lister, Kuhaneshwar A/L J. Ravichandran, and Joshua C. M. Juin for their extensive supports in proofreading and commenting on our manuscript.

References

- X. Qian, R. Ren, Y. Wang, Y. Guo, J. Fang, et al., Fighting against the common enemy of COVID-19: a practice of building a community with a shared future for mankind, *Infect. Dis. Poverty* 9 (1) (2020 Apr).
- P. Kakodkar, N. Kaka, M. Baig, A comprehensive literature review on the clinical presentation, and management of the pandemic coronavirus disease 2019 (COVID-19), *Cureus* 12 (4) (2020 Apr) e7560.
- M.E. Wilson, L.H. Chen, Travellers give wings to novel coronavirus (2019-nCoV), *J. Travel Med.* 27 (2) (2020 Feb).
- T. Singhal, A review of coronavirus disease-2019 (COVID-19), *Indian J. Pediatr.* 87 (4) (2020 Mar) 281–286.
- C. Sohrahi, Z. Alsafi, N. O'Neill, M. Khan, A. Kerwan, A. Al-Jabir, et al., World health organization declares global emergency: a review of the 2019 novel coronavirus (COVID-19), *Int. J. Surg.* 76 (2020 Apr) 71–76.
- B. Nussbaumer-Streit, V. Mayr, A.I. Dobrescu, A. Chapman, E. Persad, I. Klerings, et al., Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review, *Cochrane Database Syst. Rev.* (9) (2020 Apr).
- A. Wilder-Smith, D.O. Freedman, Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak, *J. Travel Med.* 27 (2) (2020 Feb).
- B.J. Cowling, A.E. Aiello, Public health measures to slow community spread of coronavirus disease 2019, *J. Infect. Dis.* 221 (11) (2020 Mar) 1749–1751.
- L. Wynants, B.V. Calster, M.M.J. Bonten, G.S. Collins, T.P.A. Debray, M.D. Vos, et al., Prediction models for diagnosis and prognosis of COVID-19 infection: systematic review and critical appraisal, *BMJ* (2020 Apr) m1328.
- Y. Ng, Z. Li, Y.X. Chua, W.L. Chaw, Z. Zhao, B. Er, et al., Evaluation of the effectiveness of surveillance and containment measures for the first 100 patients with COVID-19 in Singapore — January 2–February 29, *Morb. Mort. Wkly. Rep.* 69 (11) (2020 Mar) 307–311.
- G. He, W. Sun, P. Fang, J. Huang, M. Gamber, J. Cai, et al., The clinical feature of silent infections of novel coronavirus infection (COVID-19) in Wenzhou, *J. Med. Virol.* 92 (10) (2020 Apr) 1761–1763.
- J. Zhang, M. Litvinova, W. Wang, Y. Wang, X. Deng, X. Chen, et al., Evolving epidemiology and transmission dynamics of coronavirus disease 2019 outside Hubei province, China: a descriptive and modelling study, *Lancet Infect. Dis.* 20 (7) (2020 Apr) 793–802.
- M. Ben-Ezra, S. Sun, W.K. Hou, R. Goodwin, The association of being in quarantine and related COVID-19 recommended and non-recommended behaviors with psychological distress in Chinese population, *J. Affect. Disord.* 275 (2020 Oct) 66–68.
- Organization WH. Coronavirus Disease 2019 (COVID-19) Situation Report — 80, World Health Organization, Geneva, 2020, Available from: <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200409-sitrep-80-covid-19.pdf>.
- M. McKee, D. Stuckler, If the world fails to protect the economy, COVID-19 will damage health not just now but also in the future, *Nat. Med.* 26 (5) (2020 Apr) 640–642.
- B.L. Zhong, W. Luo, H.M. Li, Q.Q. Zhang, X.G. Liu, W.T. Li, et al., Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey, *Int. J. Biol. Sci.* 16 (10) (2020) 1745–1752.
- C.K.T. Lima, P.M. de Medeiros Carvalho, I. de Araújo Araruna Silva Lima, J.V.A. de Oliveira Nunes, J.S. Saraiva, R.I. de Souza, et al., The emotional impact of Coronavirus 2019-nCoV (new Coronavirus disease), *Psychiatry Res.* 287 (2020 May) 112915.
- S.K. Brooks, R.K. Webster, L.E. Smith, L. Woodland, S. Wessely, N. Greenberg, et al., The psychological impact of quarantine and how to reduce it: rapid review of the evidence, *Lancet* 395 (10227) (2020 Mar) 912–920.
- M.E. Manuell, J. Cukor, Mother nature versus human nature: public compliance with evacuation and quarantine, *Disasters* 35 (2) (2010 Nov) 417–442.
- S.W. Kim, K.P. Su, Using psychoneuroimmunity against COVID-19, *Brain Behav. Immun.* 87 (2020 Mar) 4–5.
- G.J.G. Asmundson, S. Taylor, How health anxiety influences responses to viral outbreaks like COVID-19: what all decision-makers, health authorities, and health care professionals need to know, *J. Anxiety Disord.* 71 (2020 Apr) 102211.
- S. Affairs, Provisional guidelines on standard international age classifications, in: Recommended Standard International Age Classifications for D, United Nations, New York, NY, 1982.
- M. Kinanthi, R.A. Listiyandini, U. Amaliah, R. Ramadhanty, Adaptasi Alat Ukur DASS-21 Versi Indonesia Pada Populasi Mahasiswa, 2020.
- T.P.S. Oei, S. Sawang, Y.W. Goh, F. Mukhtar, Using the depression anxiety stress scale 21 (DASS-21) across cultures, *Int. J. Psychol.* 48 (6) (2013 Dec) 1018–1029.
- J.D. Henry, J.R. Crawford, The short-form version of the depression anxiety stress scales (DASS-21): construct validity and normative data in a large non-clinical sample, *Br. J. Clin. Psychol.* 44 (2) (2005 Jun) 227–239.
- J. Willemsen, S. Markey, F. Declercq, S. Vanheule, Negative emotionality in a large community sample of adolescents: the factor structure and measurement invariance of the short version of the depression anxiety stress scales (DASS-21), *Stress Health* 27 (3) (2010 Jul) e120–e128.
- D. Lee, The convergent, discriminant, and nomological validity of the depression anxiety stress scales-21 (DASS-21), *J. Affect. Disord.* 259 (2019 Dec) 136–142.
- P.A. Bishop, R.L. Herron, Use and misuse of the Likert item responses and other ordinal measures, *Int. J. Exerc. Sci.* 8 (3) (2015) 297.
- M.J. Harrison, B.P.M. McCabe, A test for heteroscedasticity based on ordinary least squares residuals, *J. Am. Stat. Assoc.* 74 (366a) (1979 Jun) 494–499.
- S.S. Uyanto, Monte Carlo power comparison of seven most commonly used heteroscedasticity tests, *Commun. Stat., Simul. Comput.* (2019 Nov) 1–18.
- C. Wang, R. Pan, X. Wan, Y. Tan, L. Xu, C.S. Ho, et al., Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China, *Int. J. Environ. Res. Public Health* 17 (5) (2020 Mar) 1729.
- A.A. Alkhamees, S.A. Alrashed, A.A. Alzunaydi, A.S. Almohimeed, M.S. Aljohani, The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia, *Compr. Psych.* 102 (2020 Oct) 152192.
- C. Mazza, E. Ricci, S. Biondi, M. Colasanti, S. Ferracuti, C. Napoli, 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* 17 (9) (2020 May) 3165.
- L. Moccia, D. Janiri, M. Pepe, L. Dattoli, M. Molinaro, V.D. Martin, et al., Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: an early report on the Italian general population, *Brain Behav. Immun.* 87 (2020 Apr) 75–79.
- M.P. Matud, J.M. Bethencourt, I. Ibáñez, Gender differences in psychological distress in Spain, *Int. J. Soc. Psychiatry* 61 (6) (2014 Dec) 560–568.
- M. Zhang, J. Zhang, F. Zhang, L. Zhang, D. Feng, Prevalence of psychological distress and the effects of resilience and perceived social support among Chinese college students: does gender make a difference?, *Psychiatry Res.* 267 (2018 Sep) 409–413.
- F.M. Knaul, F. Bustreo, R. Horton, Countering the pandemic of gender-based violence and maltreatment of young people: The Lancet Commission, *Lancet* 395 (10218) (2020 Jan) 98–99.
- N. John, S.E. Casey, G. Carino, T. McGovern, Lessons never learned: crisis and gender-based violence, *Developing World Bioethics* 20 (2) (2020 Apr) 65–68.
- M. Hidrobo, N. Kumar, T. Palermo, A. Peterman, S. Roy, Gender-Sensitive Social Protection: A Critical Component of the COVID-19 Response in Low-and Middle-Income Countries, *Intl Food Policy Res Inst.* 2020.
- E.W. Lee, J.H. Park, Individual and socioeconomic contextual effects on depressive symptom in Korea: multilevel analysis of cross-sectional nationwide survey, *J. Korean Med. Sci.* 30 (2) (2015) 186.
- Z. Luo, Y. Li, Y. Hou, X. Liu, J. Jiang, Y. Wang, et al., Gender-specific prevalence and associated factors of major depressive disorder and generalized anxiety disorder in a Chinese rural population: the Henan rural cohort study, *BMC Public Health* 19 (1) (2019 Dec).
- W. Kim, T.H. Kim, T.H. Lee, Y.J. Ju, E.C. Park, The effect of childhood and current economic status on depressive symptoms in South Korean individuals: a longitudinal study, *Int. J. Equity Health* 15 (1) (2016 Jul).
- J.B. Ward, L. Feinstein, A.I. Vines, W.R. Robinson, M.N. Haan, A.E. Aiello, Perceived discrimination and depressive symptoms among US Latinos: the modifying role of educational attainment, *Ethn. Health* 24 (3) (2017 Apr) 271–286.
- Y.Y. Chen, P. Xu, Y. Wang, T.J. Song, N. Luo, L.J. Zhao, Prevalence of and risk factors for anxiety after coronary heart disease, *Medicine* 98 (38) (2019 Sep) e16973.
- L. Lei, X. Huang, S. Zhang, J. Yang, L. Yang, M. Xu, Comparison of prevalence and associated factors of anxiety and depression among people affected by versus

- people unaffected by quarantine during the COVID-19 epidemic in Southwestern China, *Med. Sci. Monit.* 26 (2020 Apr).
- [46] M.R. Taylor, K.E. Agho, G.J. Stevens, B. Raphael, Factors influencing psychological distress during a disease epidemic: data from Australia's first outbreak of equine influenza, *BMC Public Health* 8 (1) (2008 Oct).
- [47] B.J. Ryan, D. Coppola, D.V. Canyon, M. Brickhouse, R. Swienton, COVID-19 community stabilization and sustainability framework: an integration of the Maslow hierarchy of needs and social determinants of health, *Disaster Med. Public Health Prep.* (2020 Apr) 1–7.
- [48] X. Zhou, C.L. Snoswell, L.E. Harding, M. Bambling, S. Edirippulige, X. Bai, et al., The role of telehealth in reducing the mental health burden from COVID-19, *Telemed. E-Health* 26 (4) (2020 Apr) 377–379.
- [49] A. Lamuri, S.D. Elvira, P.R. Lukman, K. Malik, H. Shatri, M. Abdullah, Data for: psychological distress, misconception and commuting tendency among Greater Jakarta area residents during COVID-19 pandemic and community containment, Mendeley (2020), Available from: <https://data.mendeley.com/datasets/j2ky9mj2bd/1>.