Submission Confirmation for PONE-D-21-24580 - [EMID:3eb72ee8e32e08e6]

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Inbox

PLOS ONE <em@editorialmanager.com> Thu, Jul 29, 2021, 9:01 PM

to me

PONE-D-21-24580
Association of stigma in mental health and quality of life among Indonesian Covid-19 survivors
PLOS ONE

Dear Dr. Efendi,

Thank you for submitting your manuscript entitled 'Association of stigma in mental health and quality of life among Indonesian Covid-19 survivors' to PLOS ONE. Your assigned manuscript number is PONE-D-21-24580.

We will now begin processing your manuscript and may contact you if we require any further information. You will receive an update once your manuscript passes our in-house technical check; you can also check the status of your manuscript by logging into your account at https://www.editorialmanager.com/pone/.

If during submission you selected the option for your manuscript to be posted on the bioRxiv preprint server (http://biorxiv.org), we will be assessing the manuscript for suitability shortly. If suitable, your preprint will be made publicly available on bioRxiv and you will receive an email confirmation from them when it has posted. Please check your response to this question and email us as soon as possible at plosone@plos.org if it has been answered incorrectly. Further information about our partnership with bioRxiv to facilitate the rapid availability of life sciences research is available at http://journals.plos.org/plosone/s/preprints.

If you have any inquiries or other comments regarding this manuscript please contact plosone@plos.org.

Thank you for your support of PLOS ONE.

Kind regards,
PLOS ONE

PLOS ONE Author Notice: Submission moving to editorial review - [EMID:46142c60923594a1]

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Inbox

PLOS ONE <em@editorialmanager.com> Fri, Jul 30, 2021, 8:19 PM

to me

Association of stigma in mental health and quality of life among Indonesian Covid-19 survivors

Dear Dr. Efendi,

We're writing to let you know that we've checked your manuscript for our basic formatting requirements and we're now sending it to a staff editor for checks related to our editorial policies. Once this review is complete we will assign your submission to an Academic Editor for peer review. This is part of our standard process for submissions and no action is required from you at this time.

For your reference, our submission guidelines can be found on this page of our website: http://journals.plos.org/plosone/s/submission-guidelines.

Thank you for submitting your work to PLOS ONE and supporting our mission of Open Science.

Kind regards,

Jay-ar Formentera Medes
PLOS ONE

PLOS ONE Decision: Revision required [PONE-D-21-24580] - [EMID:a1a9ed0d3a6394ba]

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Inbox

PLOS ONE <em@editorialmanager.com> Nov 12, 2021, 3:41 PM

to me

PONE-D-21-24580
Association of stigma in mental health and quality of life among Indonesian Covid-19 survivors
PLOS ONE

Dear Dr. Efendi,

Thank you for submitting your manuscript to PLOS ONE. After careful consideration, we feel that it has merit but does not fully meet PLOS ONE's publication criteria as it currently stands. Therefore, we invite you to submit a revised version of the manuscript that addresses the points raised during the review process.

Please submit your revised manuscript by Dec 27 2021 11:59PM. If you will need more time than this to complete your revisions, please reply to this message or contact the journal office at plosone@plos.org. When you're ready to submit your revision, log on to https://www.editorialmanager.com/pone/ and select the 'Submissions Needing Revision' folder to locate your manuscript file.

Please include the following items when submitting your revised manuscript:

- A rebuttal letter that responds to each point raised by the academic editor and reviewer(s). You should upload this letter as a separate file labeled 'Response to Reviewers'.
- A marked-up copy of your manuscript that highlights changes made to the original version. You should upload this as a separate file labeled 'Revised Manuscript with Track Changes'.
- An unmarked version of your revised paper without tracked changes. You should upload this as a separate file labeled 'Manuscript'.

If you would like to make changes to your financial disclosure, please include your updated statement in your cover letter. Guidelines for resubmitting your figure files are available below the reviewer comments at the end of this letter.

If applicable, we recommend that you deposit your laboratory protocols in protocols.io to enhance the reproducibility of your results. Protocols.io assigns your protocol its own identifier (DOI) so that it can be cited independently in the future. For instructions see: https://journals.plos.org/plosone/s/submission-guidelines#loc-laboratory-protocols. Additionally, PLOS ONE offers an option for publishing peer-reviewed Lab Protocol articles, which describe protocols hosted on protocols.io. Read more information on sharing protocols at https://plos.org/protocols?utm_medium=editorial-email&utm_source=authorletters&utm_campaign=protocols.

We look forward to receiving your revised manuscript.

Kind regards,

Desalegn Admassu Ayana, Ph.D
Academic Editor
PLOS ONE

Journal Requirements:

When submitting your revision, we need you to address these additional requirements.

1. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming. The PLOS ONE style templates can be found at https://journals.plos.org/plosone/s/file?id=wjVg/PLOSOne_formatting_sample_main_body.pdf and https://journals.plos.org/plosone/s/file?id=ba62/PLOSOne_formatting_sample_title_authors_affiliations.pdf

2. We suggest you thoroughly copyedit your manuscript for language usage, spelling, and grammar. If you do not know anyone who can help you do this, you may wish to consider employing a professional scientific editing service.

Whilst you may use any professional scientific editing service of your choice, PLOS has partnered with both American Journal Experts (AJE) and Editage to provide discounted services to PLOS authors. Both organizations have experience helping authors meet PLOS guidelines and can provide language editing, translation, manuscript formatting, and figure formatting to ensure your manuscript meets our submission guidelines. To take advantage of our partnership with AJE, visit the AJE website (http://learn.aje.com/plos/) for a 15% discount off AJE services. To take advantage of our partnership with Editage, visit the Editage website (www.editage.com) and enter referral code PLOSEDIT for a 15% discount off Editage services. If the PLOS editorial team finds any language issues in text that either AJE or Editage has edited, the service provider will re-edit the text for free.

Upon resubmission, please provide the following:

The name of the colleague or the details of the professional service that edited your manuscript

A copy of your manuscript showing your changes by either highlighting them or using track changes (uploaded as a *supporting information* file)

A clean copy of the edited manuscript (uploaded as the new *manuscript* file)

3. We note that the grant information you provided in the ‘Funding Information’ and ‘Financial Disclosure’ sections do not match.

When you resubmit, please ensure that you provide the correct grant numbers for the awards you received for your study in the ‘Funding Information’ section.

[Note: HTML markup is below. Please do not edit.]

Reviewers' comments:

Reviewer's Responses to Questions

Comments to the Author

1. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Partly

Reviewer #2: No

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2. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: Yes

Reviewer #2: No

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3. Have the authors made all data underlying the findings in their manuscript fully available?

The PLOS Data policy requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: No

Reviewer #2: No

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4. Is the manuscript presented in an intelligible fashion and written in standard English?

PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: No

Reviewer #2: No

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5. Review Comments to the Author

Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: This manuscript has an important contribution that appears to be an area that is clearly lacking. The authors have highlighted that the correlation between stigma, QoL, and mental health. but some concern
Another categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL. Does it mean is not considered?
Another highlighted that none of the subscales was used, only the total scores. Why not consider the subscales for quality of life and mental health conditions?
Another consider a p-value of < 0.10. to include variables in multiple logistic regression. any justification behind?

one of the recommended COVID-19 prevention is social distancing. how it may be seen with the stigma type?
sigma, QoL, and mental health conditions have reverse causality, should clearly describe how they potentially confound to each other.

Grammar and sentence/paragraph structure could be revised throughout to improve the flow.

Reviewer #2: 1. The rationale isn't entirely clear for the need for this study
2. The paper needs an English language copy editing from the beginning to the end. Please focus on it and the all the findings had not been written rigorously.
3. The manuscript has poor discussion and seems like shallow.

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6. PLOS authors have the option to publish the peer review history of their article (what does this mean?). If published, this will include your full peer review and any attached files.

If you choose “no”, your identity will remain anonymous but your review may still be made public.

Do you want your identity to be public for this peer review? For information about this choice, including consent withdrawal, please see our Privacy Policy.

Reviewer #1: No

Reviewer #2: No

[NOTE: If reviewer comments were submitted as an attachment file, they will be attached to this email and accessible via the submission site. Please log into your account, locate the manuscript record, and check for the action link "View Attachments". If this link does not appear, there are no attachment files.]

While revising your submission, please upload your figure files to the Preflight Analysis and Conversion Engine (PACE) digital diagnostic tool, https://pacev2.apexcovantage.com/. PACE helps ensure that figures meet PLOS requirements. To use PACE, you must first register as a user. Registration is free. Then, login and navigate to the UPLOAD tab, where you will find detailed instructions on how to use the tool. If you encounter any issues or have any questions when using PACE, please email PLOS at figures@plos.org. Please note that Supporting Information files do not need this step.

The required amendments with the reviewer’s comments:

Reviewer 1

Comments	**Response**
This manuscript has an important contribution that appears to be an area that is clearly lacking. The authors have highlighted that the correlation between stigma, QoL, and mental health. but some concern Another categorized the total questionnaire responses into lower (< mean) and higher	We thank the reviewer for the thoughtful review of our manuscript. Based on previous studies, we clarified this point in the methods section that categories on both BRIEF-WHOQoL and MHI-38. We have cited the appropriate references for the concern. We have added the sentence in page 5, “We categorized the total

(> mean) QoL. Does it mean is not considered?	questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)".
Another highlighted that none of the subscales was used, only the total scores. Why not consider the subscales for quality of life and mental health conditions?	Thank you for the encouraging feedback. As we explained earlier, we have added the sentence to discuss the quality of life, "We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)". We have now included more explanation about mental health conditions and added the sentence as follows: "Then, we categorized the total questionnaire answers into lower (< mean) and higher (> mean) mental health. We highlighted that none of the subscales was used, only the total scores and referred to previous studies (27, 28)". We clarified that we did not observe the subscales for both conditions following previous studies (page 6).
Another consider a p-value of < 0.10. to include variables in multiple logistic regression. any justification behind?	We appreciate the reviewer drawing our attention to this typographical error, corrected in our resubmission. We have revised the type on p-value, which should be $p<0.05$. We believe the current table would make more transparent for the results (page 6).

one of the recommended COVID-19 prevention is social distancing. how it may be seen with the stigma type?	Thank you for the feedback. We clarified that social distancing is the program provided by the Indonesian Government to prevent the spread of COVID-19 in the community, and it is not related to stigma directly.
sigma, QoL, and mental health conditions have reverse causality, should clearly describe how they potentially confound to each other.	Thank you for your feedback. The present results are cross-sectional and thus cannot explain the causes of either sigma, QoL, and mental health conditions, yet they do suggest that different pathways may exist for the development of each of these symptoms. We clarified that in our study by conducting multivariate analysis, there was a correlation between stigma, QoL, and Mental Health. The significance level of 0.05. Only $p<0.05$ were included in the multivariate logistic regression analysis to identify factors significantly associated with the study outcome after adjusting for other significant predictors. When stigma is high, it is also followed by a decrease in quality of life and mental health.
Grammar and sentence/paragraph structure could be revised throughout to improve the flow.	Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing for typos and grammatical errors. Colleagues have reviewed the content to meet the journal's standards and ensure the sentence/paragraph structure improve the flow.

Reviewer 2

The rationale isn't entirely clear for the need for this study	**Thank you for the feedback.** The rationale has been added, and a more focused to justify the article (page..). We added the sentence as follows in the introduction: While determination to reduce the number of new confirmed cases and new deaths continues in Indonesia, the incidence of stigma toward COVID-19 survivors has been reported in social media, becoming a serious concern [11]. People who have recovered from a SARS-CoV-2 infection may experience multiple types of stigma, such as anticipated stigma—fear of being tested for SARS-CoV-2—perceived stigma—feeling judged by others—and internalized stigma—experiencing shame and self-rejection [1]. Many COVID-19 survivors have even reported discrimination, stereotyping, and job loss due to people associating them with a deadly disease [6,12].
The paper needs an English language copy editing from the beginning to the end. Please focus on it and the all the findings had not been written rigorously.	Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing. Colleagues have reviewed the content to meet the journal's standards and ensure the study's rigour.
The manuscript has poor discussion and seems like shallow.	Thank you for your concern. The discussion has been rewritten and reviewed based on the key results. We have added some sentences as follow:

	“The stigma that occurs in the community is due to the fear that survivors can still transmit COVID-19. This is due to a lack of accurate knowledge and information [35,36]”. “In addition, the program for disseminating the facts about COVID-19 needs to be a concern for the government. It can be done across sectors, community leaders, mass media, and artists or social influencers [37]. Thus, knowledge can increase, and people can be calmer in dealing with the COVID-19 pandemic”. “The stigmatization process occurs due to fear and being held responsible for contracting COVID-19 in the community. When this happens, individuals begin to gossip, get too interested in their COVID-19 experiences and become wary of interacting with survivors. This influences the dread of disclosing COVID-19's status and the unwillingness to meet new individuals, particularly those from high-risk groups [42]. Finally, adverse effects on social interactions are associated with reducing the individual's overall quality of life and mental health”. In this study, we found that females were less likely to experience stigma related to mental health than males. Being female, in turn, is reported to be associated with

	significantly higher levels of stress, anxiety, and poor mental health status [43]. However, the male also faces problems that impact stress and mental disorders. This is due to work, income, family, and life transition factors. Not only that, the lack of counselling service facilities for men due to the issue of masculinity needs further attention [44,45]. During the COVID-19 pandemic, male survivors also experienced an impact on work, income, and self-actualization, making it easier for them to experience mental disorders [46,47]. The significant correlation between being male and mental health that caused worse outcomes in COVID-19 has been supported by other studies in China [50]. However, understanding and providing a psychological consultation room can help reduce the psychological burden experienced by male. We also discovered that labourers and entrepreneurs were less likely to experience stigma related to mental health. Testing positive for COVID-19 while working as labourers may cause insecurity due to lost work productivity. However, a good and conducive work environment can provide material, psychological and social support. Previous research has stated that a good work environment can support COVID-19

	survivors to recover quickly and be enthusiastic during quarantine [51,52]. The support provided can be in the form of food, money, and daily necessities. WHO stated that stigma affected mental health among healthcare workers, patients, and survivors could be avoidable through adequate education through the media [53]. Understanding the primary drivers of misinformation is critical to preventing misjudgement in the community and increasing a sense of brotherhood to help each other.

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Inbox

PLOS ONE **<em@editorialmanager.com>** Sat, Dec 18, 2021, 10:41 PM

to me

Dear Dr. Efendi,

The PDF for your submission,

'Association of stigma with mental health and quality of life among Indonesian COVI D-19 survivors' has been built. If you have not already done so, please review your manuscript and approve your PDF to complete your https://www.editorialmanager.com/pone/ submission.

Thank you for your time.

PLOS ONE Staff
https://www.editorialmanager.com/pone/

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In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: https://www.editorialmanager.com/pone/login.asp?a=r). Please contact the publication office if you have any questions.

PLOS ONE: Edits requested on your submission PONE-D-21-24580R1 - [EMID:3c595f04f25c1349]

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Inbox

PLOS ONE <em@editorialmanager.com> Thu, Jan 13, 2022, 7:19 AM

to me

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==========

PONE-D-21-24580R1
Association of stigma with mental health and quality of life among Indonesian COVID -19 survivors
Dr Ferry Efendi

Dear Dr. Efendi,

We've checked your submission and before we can proceed, we need you to

address the following issues:

1. Can you please upload an additional copy of your revised manuscript that does not contain any tracked changes or highlighting as your main article file. This will be used in the production process if your manuscript is accepted. Please amend the file type for the file showing your changes to Revised Manuscript w/tracked changes. Please follow this link for more information: http://blogs.PLOS.org/everyone/2011/05/10/how-to-submit-your-revised-manuscript/

We've returned your manuscript to your account. Please resolve these issues and resubmit your manuscript within 21 days. If you need more time, please email the journal office at plosone@plos.org. We are happy to grant extensions of up to one month past this due date. If we do not hear from you within 21 days, we will withdraw your manuscript.

Please log on to PLOS Editorial Manager at https://www.editorialmanager.com/pone/ to access your manuscript. You will find your manuscript in the 'Submissions Sent Back to Author' link under the New Submissions menu. Be sure to remove your previous manuscript file if you are uploading a new file in response to these requests. After you've made the changes requested above, please be sure to view and approve the revised PDF after rebuilding the PDF to complete the resubmission process.

We are requesting these changes to comply with the PLOS ONE submission guidelines (https://journals.plos.org/plosone/s/submission-guidelines). Please note that we won't send your manuscript for review until you have resolved the above requests.

Thank you for submitting your work to PLOS ONE and supporting our mission of Open Science.

Kind regards,

Edrian Nim Tolentino
PLOS ONE

PLOS ONE Author Notice: Submission moving to editorial review - [EMID:2bea1982a412d7eb]

External

Inbox

PLOS ONE <em@editorialmanager.com> Jan 17, 2022, 9:35 PM

to me

Association of stigma with mental health and quality of life among Indonesian COVID -19 survivors
PONE-D-21-24580R1

Dear Dr. Efendi,

We're writing to let you know that we've checked your manuscript for our basic formatting requirements and we're now sending it to a staff editor for checks related to our editorial policies. Once this review is complete we will assign your submission to an Academic Editor for peer review. This is part of our standard process for submissions and no action is required from you at this time.

For your reference, our submission guidelines can be found on this page of our website: http://journals.plos.org/plosone/s/submission-guidelines.

Thank you for submitting your work to PLOS ONE and supporting our mission of Open Science.

Kind regards,

Edrian Nim Tolentino
PLOS ONE

_____
In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: https://www.editorialmanager.com/pone/login.asp?a=r). Please contact the publication office if you have any questions.

PONE-D-21-24580R1: Final Decision Being Processed - [EMID:87f249be68ff6f32]

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Inbox

PLOS ONE <em@editorialmanager.com> Mon, Feb 7, 2022, 4:47 PM

to me

CC: "Joni Wahyuhadi" joniwahyuhadi@fk.unair.ac.id, "Makhyan Jibril Al Farabi" makhyan.jibril@gmail.com, "Iman Harymawan" harymawan.iman@feb.unair.ac.id, "Atika Dian Ariana" atika.ariana@psikologi.unair.ac.id, "Hidayat Arifin" hidayat.unair@gmail.com, "Qorinah Estiningtyas Sakilah Adnani" qorinahestiningtyas@yahoo.co.id, "Inbar Levkovich" inbar.lev2@gmail.com

Association of stigma with mental health and quality of life among Indonesian COVID -19 survivors
PONE-D-21-24580R1

Dear Dr. Efendi,

We're pleased to inform you that your manuscript has been judged scientifically suitable for publication and will be formally accepted for publication once it meets all outstanding technical requirements.

Within one week, you'll receive an e-mail detailing the required amendments. When these have been addressed, you'll receive a formal acceptance letter and your manuscript will be scheduled for publication.

An invoice for payment will follow shortly after the formal acceptance. To ensure an efficient process, please log into Editorial Manager at http://www.editorialmanager.com/pone/, click the 'Update My Information' link at the top of the page, and double check that your user information is up-to-date. If you have any billing related questions, please contact our Author Billing department directly at authorbilling@plos.org.

If your institution or institutions have a press office, please notify them about your upcoming paper to help maximize its impact. If they'll be preparing press materials, please inform our press team as soon as possible -- no later than 48 hours after receiving the formal acceptance. Your manuscript will remain under strict press embargo until 2 pm Eastern Time on the date of publication. For more information, please contact onepress@plos.org.

Kind regards,

Desalegn Admassu Ayana, Ph.D
Academic Editor
PLOS ONE

Additional Editor Comments (optional):

Reviewers' comments:

Reviewer's Responses to Questions

Comments to the Author

1. If the authors have adequately addressed your comments raised in a previous round of review and you feel that this manuscript is now acceptable for publication, you may indicate that here to bypass the “Comments to the Author” section, enter your conflict of interest statement in the “Confidential to Editor” section, and submit your "Accept" recommendation.

Reviewer #1: All comments have been addressed

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2. Is the manuscript technically sound, and do the data support the conclusions?

The manuscript must describe a technically sound piece of scientific research with data that supports the conclusions. Experiments must have been conducted rigorously, with appropriate controls, replication, and sample sizes. The conclusions must be drawn appropriately based on the data presented.

Reviewer #1: Yes

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3. Has the statistical analysis been performed appropriately and rigorously?

Reviewer #1: Yes

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4. Have the authors made all data underlying the findings in their manuscript fully available?

The PLOS Data policy requires authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception (please refer to the Data Availability Statement in the manuscript PDF file). The data should be provided as part of the manuscript or its supporting information, or deposited to a public repository. For example, in addition to summary statistics, the data points behind means, medians and variance measures should be available. If there are restrictions on publicly sharing data—e.g. participant privacy or use of data from a third party—those must be specified.

Reviewer #1: Yes

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5. Is the manuscript presented in an intelligible fashion and written in standard English?

PLOS ONE does not copyedit accepted manuscripts, so the language in submitted articles must be clear, correct, and unambiguous. Any typographical or grammatical errors should be corrected at revision, so please note any specific errors here.

Reviewer #1: Yes

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6. Review Comments to the Author

Please use the space provided to explain your answers to the questions above. You may also include additional comments for the author, including concerns about dual publication, research ethics, or publication ethics. (Please upload your review as an attachment if it exceeds 20,000 characters)

Reviewer #1: (No Response)

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7. PLOS authors have the option to publish the peer review history of their article (what does this mean?). If published, this will include your full peer review and any attached files.

If you choose “no”, your identity will remain anonymous but your review may still be made public.

Do you want your identity to be public for this peer review? For information about this choice, including consent withdrawal, please see our Privacy Policy.

Reviewer #1: No

Notification of Formal Acceptance for PONE-D-21-24580R1 - [EMID:c3eb2d2ab7f64e33]

External

Inbox

PLOS ONE <em@editorialmanager.com> Mon, Feb 14, 2022, 10:54 PM

to me

CC: "Hidayat Arifin" hidayat.unair@gmail.com, "Joni Wahyuhadi" joniwahyuhadi@fk.unair.ac.id, "Makhyan Jibril Al Farabi" makhyan.jibril@gmail.com, "Iman Harymawan" harymawan.iman@feb.unair.ac.id, "Atika Dian Ariana" atika.ariana@psikologi.unair.ac.id, "Qorinah Estiningtyas Sakilah Adnani" qorinahestiningtyas@yahoo.co.id, "Inbar Levkovich" inbar.lev2@gmail.com

PONE-D-21-24580R1
Association of stigma with mental health and quality of life among Indonesian COVID -19 survivors

Dear Dr. Efendi:

I'm pleased to inform you that your manuscript has been deemed suitable for publication in PLOS ONE. Congratulations! Your manuscript is now with our production department.

If your institution or institutions have a press office, please let them know about your upcoming paper now to help maximize its impact. If they'll be preparing press materials, please inform our press team within the next 48 hours. Your manuscript will remain under strict press embargo until 2 pm Eastern Time on the date of publication. For more information please contact onepress@plos.org.

If we can help with anything else, please email us at plosone@plos.org.

Thank you for submitting your work to PLOS ONE and supporting open access.

Kind regards,
PLOS ONE Editorial Office Staff

on behalf of
Dr. Desalegn Admassu Ayana
Academic Editor
PLOS ONE

Your article is published in PLOS ONE - Association of stigma with mental health and quality of life among Indonesian COVID-19 survivors

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Inbox

No Reply <noreply@plos.org>

Thu, Feb 24, 2022, 3:21 PM

to me

PLOS ONE

Dear Ferry Efendi,

I'm excited to share that your article, Association of stigma with mental health and quality of life among Indonesian COVID-19 survivors, is now published in *PLOS ONE*. Let me be the first to congratulate you! Your article is now freely available for anyone around the world to read, cite and reuse under an Open Access license.

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With best wishes,

Emily Chenette, Editor-in-Chief, *PLOS ONE*
ORCID: 0000-0003-0393-395X

PLOS ONE

Association of stigma with mental health and quality of life among Indonesian COVID-19 survivors

--Manuscript Draft--

Manuscript Number:	PONE-D-21-24580R1
Article Type:	Research Article
Full Title:	Association of stigma with mental health and quality of life among Indonesian COVID-19 survivors
Short Title:	Stigma with mental health and quality of life among Indonesian COVID-19 survivors
Corresponding Author:	Ferry Efendi Universitas Airlangga Fakultas Keperawatan Surabaya, INDONESIA
Keywords:	stigma; Quality of Life; Covid-19 Survivor; Mental health; Indonesia, health care
Abstract:	Background and objective Coronavirus disease 2019 (COVID-19) survivors face societal stigma. The study aims to analyze the association of this stigma with the mental health and quality of life of COVID-19 survivors. Methods In this cross-sectional study, we observed 547 adults who were previously documented as severe acute respiratory syndrome coronavirus (SARS-CoV-2) positive by a polymerase chain reaction (PCR) test, treated in a hospital or an emergency hospital and proven to be SARS-CoV-2 negative by their latest PCR test. We adopted the Berger HIV Stigma Scale to measure stigma; the World Health Organization Quality of Life Brief Form to measure quality of life; and the Mental Health Inventory-38 to measure mental health. The chi-square and binary logistic regression tests were used to find the correlation between the variables. Results The multivariate analysis revealed that medium stigma was more likely related to quality of life and mental health than low stigma. Females were less likely to experience stigma related to mental health than men, and respondents who worked as laborers and entrepreneurs were less likely to experience stigma related to mental health than those who worked as civil workers/army personnel/teachers/lecturers. COVID-19 survivors experienced medium stigma in society and lower quality of life and mental health status. We found that quality of life and mental health were affected by stigma, sex, and occupation. Conclusion COVID-19 survivors are a vulnerable group that is most at risk when they return to their communities. Creating a safe environment and providing respectful care, including addressing complex stigma factors, is vital for developing appropriate interventions.
Order of Authors:	Joni Wahyuhadi
	Ferry Efendi
	Makhyan Jibril Al Farabi
	Iman Harymawan
	Atika Dian Ariana
	Hidayat Arifin
	Qorinah Estiningtyas Sakilah Adnani
	Inbar Levkovich
Opposed Reviewers:	

Response to Reviewers:	The required amendments with the reviewer's comments: Reviewer 1 Comments Response This manuscript has an important contribution that appears to be an area that is clearly lacking. The authors have highlighted that the correlation between stigma, QoL, and mental health. but some concern Another categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL. Does it mean is not considered? We thank the reviewer for the thoughtful review of our manuscript. Based on previous studies, we clarified this point in the methods section that categories on both BRIEF-WHOQoL and MHI-38. We have cited the appropriate references for the concern. We have added the sentence in page 5, "We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)". Another highlighted that none of the subscales was used, only the total scores. Why not consider the subscales for quality of life and mental health conditions? Thank you for the encouraging feedback. As we explained earlier, we have added the sentence to discuss the quality of life, "We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)". We have now included more explanation about mental health conditions and added the sentence as follows: "Then, we categorized the total questionnaire answers into lower (< mean) and higher (> mean) mental health. We highlighted that none of the subscales was used, only the total scores and referred to previous studies (27, 28)". We clarified that we did not observe the subscales for both conditions following previous studies (page 6). Another consider a p-value of < 0.10. to include variables in multiple logistic regression. any justification behind? We appreciate the reviewer drawing our attention to this typographical error, corrected in our resubmission. We have revised the type on p-value, which should be p<0.05. We believe the current table would make more transparent for the results (page 6). one of the recommended COVID-19 prevention is social distancing. how it may be seen with the stigma type? Thank you for the feedback. We clarified that social distancing is the program provided by the Indonesian Government to prevent the spread of COVID-19 in the community, and it is not related to stigma directly. sigma, QoL, and mental health conditions have reverse causality, should clearly describe how they potentially confound to each other. Thank you for your feedback. The present results are cross-sectional and thus cannot explain the causes of either sigma, QoL, and mental health conditions, yet they do suggest that different pathways may exist for the development of each of these symptoms. We clarified that in our study by conducting multivariate analysis, there was a correlation between stigma, QoL, and Mental Health. The significance level of 0.05. Only p<0.05 were included in the multivariate logistic regression analysis to identify factors significantly associated with the study outcome after adjusting for other significant predictors. When stigma is high, it is also followed by a decrease in quality of life and mental health. Grammar and sentence/paragraph structure could be revised throughout to improve the flow. Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing for typos and grammatical errors. Colleagues have reviewed the content to meet the journal's standards and ensure the sentence/paragraph structure improve the flow. Reviewer 2 The rationale isn't entirely clear for the need for this study Thank you for the feedback. The rationale has been added, and a more focused to justify the article (page..). We added the sentence as follows in the introduction: While determination to reduce the number of new confirmed cases and new deaths continues in Indonesia, the incidence of stigma toward COVID-19 survivors has been reported in social media, becoming a serious concern [11]. People who have recovered from a SARS-CoV-2 infection may experience multiple types of stigma, such as anticipated stigma—fear of being tested for SARS-CoV-2—perceived stigma—feeling judged by others—and internalized stigma—experiencing shame and self-rejection [1]. Many COVID-19 survivors have even reported discrimination, stereotyping, and job loss due to people associating them with a deadly disease [6,12].

	The paper needs an English language copy editing from the beginning to the end. Please focus on it and the all the findings had not been written rigorously. Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing. Colleagues have reviewed the content to meet the journal's standards and ensure the study's rigour. The manuscript has poor discussion and seems like shallow. Thank you for your concern. The discussion has been rewritten and reviewed based on the key results. We have added some sentences as follow: “The stigma that occurs in the community is due to the fear that survivors can still transmit COVID-19. This is due to a lack of accurate knowledge and information [35,36]”. “In addition, the program for disseminating the facts about COVID-19 needs to be a concern for the government. It can be done across sectors, community leaders, mass media, and artists or social influencers [37]. Thus, knowledge can increase, and people can be calmer in dealing with the COVID-19 pandemic”. “The stigmatization process occurs due to fear and being held responsible for contracting COVID-19 in the community. When this happens, individuals begin to gossip, get too interested in their COVID-19 experiences and become wary of interacting with survivors. This influences the dread of disclosing COVID-19's status and the unwillingness to meet new individuals, particularly those from high-risk groups [42]. Finally, adverse effects on social interactions are associated with reducing the individual's overall quality of life and mental health”. In this study, we found that females were less likely to experience stigma related to mental health than males. Being female, in turn, is reported to be associated with significantly higher levels of stress, anxiety, and poor mental health status [43]. However, the male also faces problems that impact stress and mental disorders. This is due to work, income, family, and life transition factors. Not only that, the lack of counselling service facilities for men due to the issue of masculinity needs further attention [44,45]. During the COVID-19 pandemic, male survivors also experienced an impact on work, income, and self-actualization, making it easier for them to experience mental disorders [46,47]. The significant correlation between being male and mental health that caused worse outcomes in COVID-19 has been supported by other studies in China [50]. However, understanding and providing a psychological consultation room can help reduce the psychological burden experienced by male. We also discovered that labourers and entrepreneurs were less likely to experience stigma related to mental health. Testing positive for COVID-19 while working as labourers may cause insecurity due to lost work productivity. However, a good and conducive work environment can provide material, psychological and social support. Previous research has stated that a good work environment can support COVID-19 survivors to recover quickly and be enthusiastic during quarantine [51,52]. The support provided can be in the form of food, money, and daily necessities. WHO stated that stigma affected mental health among healthcare workers, patients, and survivors could be avoidable through adequate education through the media [53]. Understanding the primary drivers of misinformation is critical to preventing misjudgment in the community and increasing a sense of brotherhood to help each other.
Additional Information:	
Question	**Response**
Financial Disclosure Enter a financial disclosure statement that describes the sources of funding for the work included in this submission. Review the submission guidelines for detailed requirements. View published research articles from *PLOS ONE* for specific examples. This statement is required for submission and **will appear in the published article** if	The authors received a grant from Universitas Airlangga, Indonesia (No. 1034/UN3.14/PT/2020). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

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Ethics Statement Enter an ethics statement for this submission. This statement is required if the study involved: • Human participants • Human specimens or tissue • Vertebrate animals or cephalopods • Vertebrate embryos or tissues • Field research Write "N/A" if the submission does not require an ethics statement. General guidance is provided below. Consult the submission guidelines for detailed instructions. **Make sure that all information entered here is included in the Methods section of the manuscript.**	This study was approved by the Health Ethics Committee, Faculty of Nursing, Airlangga University, with reference number 2105-KEPK.

Format for specific study types **Human Subject Research (involving human participants and/or tissue)** • Give the name of the institutional review board or ethics committee that approved the study • Include the approval number and/or a statement indicating approval of this research • Indicate the form of consent obtained (written/oral) or the reason that consent was not obtained (e.g. the data were analyzed anonymously) **Animal Research (involving vertebrate animals, embryos or tissues)** • Provide the name of the Institutional Animal Care and Use Committee (IACUC) or other relevant ethics board that reviewed the study protocol, and indicate whether they approved this research or granted a formal waiver of ethical approval • Include an approval number if one was obtained • If the study involved *non-human primates*, add *additional details* about animal welfare and steps taken to ameliorate suffering • If anesthesia, euthanasia, or any kind of animal sacrifice is part of the study, include briefly which substances and/or methods were applied **Field Research** Include the following details if this study involves the collection of plant, animal, or other materials from a natural setting: • Field permit number • Name of the institution or relevant body that granted permission	
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Describe where the data may be found in full sentences. If you are copying our sample text, replace any instances of XXX with the appropriate details. • If the data are **held or will be held in a public repository**, include URLs, accession numbers or DOIs. If this information will only be available after acceptance, indicate this by ticking the box below. For example: *All XXX files are available from the XXX database (accession number(s) XXX, XXX.*). • If the data are all contained **within the manuscript and/or Supporting Information files**, enter the following: *All relevant data are within the manuscript and its Supporting Information files.* • If neither of these applies but you are able to provide **details of access elsewhere**, with or without limitations, please do so. For example: *Data cannot be shared publicly because of [XXX]. Data are available from the XXX Institutional Data Access / Ethics Committee (contact via XXX) for researchers who meet the criteria for access to confidential data.* *The data underlying the results presented in the study are available from (include the name of the third party*	Data available based on request from the readers.

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Additional data availability information:	

COVER LETTER

July 28, 2021

Dear
Editor in Chief
PlosOne

On behalf of my team, I wish to submit an original research article entitled “Association of stigma in mental health and quality of life among Indonesian Covid-19 survivors” for consideration by the PlosOne.

In this manuscript, we try to analyze the stigma experienced by Covid-19 survivors in Indonesia. In addition, we also find out the relationship between the stigma experienced by Covid-19 survivors with quality of life and mental health. The study contributes to the development of knowledge in Covid-19, especially their mental health condition.

I confirm that this work is original and has not been published elsewhere, nor is it currently considered for publication elsewhere. To conduct this study, a grant number 1034/UN3.14/PT/2020 was received from Universitas Airlangga, Indonesia. The study’s funders played no part in the study design, data collection, data analysis, data interpretation, or report writing. All authors had full access to all the data in the study and had final responsibility for submitting it for publication. With the submission, the authors confirm that there are no conflicts of interest.

This manuscript is appropriate for publication in the PlosOne journal and attracts interest to global readers. Thank you very much.

Sincerely,
Ferry Efendi, S. Kep., Ns., M. Sc., Ph.D
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RESEARCH ARTICLE

Association of stigma with mental health and quality of life among Indonesian COVID-19 survivors

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Abstract

Background and objective

Coronavirus disease 2019 (COVID-19) survivors face societal stigma. The study aims to analyze

the association of this stigma with the mental health and quality of life of COVID-19 survivors.

Methods

In this cross-sectional study, we observed 547 adults who were previously documented as severe acute respiratory syndrome coronavirus (SARS-CoV-2) positive by a polymerase chain reaction (PCR) test, treated in a hospital or an emergency hospital and proven to be SARS-CoV-2 negative by their latest PCR test. We adopted the Berger HIV Stigma Scale to measure stigma; the World Health Organization Quality of Life Brief Form to measure quality of life; and the Mental Health Inventory-38 to measure mental health. The chi-square and binary logistic regression tests were used to find the correlation between the variables.

Results

The multivariate analysis revealed that medium stigma was more likely related to quality of life and mental health than low stigma. Females were less likely to experience stigma related to mental health than men, and respondents who worked as laborers and entrepreneurs were less likely to experience stigma related to mental health than those who worked as civil workers/army personnel/teachers/lecturers. COVID-19 survivors experienced medium stigma in society and lower quality of life and mental health status. We found that quality of life and mental health were affected by stigma, sex, and occupation.

Conclusion

COVID-19 survivors are a vulnerable group that is most at risk when they return to their communities. Creating a safe environment and providing respectful care, including addressing complex stigma factors, is vital for developing appropriate interventions.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has affected the worldwide population, thus creating a burden of disease and mortality and an unprecedented impact on social life (1,2). According to the World Health Organization (WHO), on February 18, 2021, more than 109 million cases had been confirmed and approximately two million deaths had occurred across 223 countries (3). Insufficient knowledge and contradictory information about the severity of and protection against severe acute respiratory syndrome coronavirus (SARS-CoV-2) has increased anxiety among the population (1). This uncertainty and anxiety have led people to easily believe vague and biased information from the media, social media, and self-proclaimed experts (4). At the same time, this rapidly spreading and unpredictable pandemic has led to the imposition of social stigma and discrimination against COVID-19 survivors (5,6). According to the WHO, "all efforts must be taken to scientifically destigmatize COVID-19 instead of statutory sermons by lawmakers" (7). Usually, stigma develops when people are afraid and believe that COVID-19 survivors are still contagious.

Indonesia is one of the countries that has suffered remarkably in terms of the number of COVID-19 cases. With approximately 270 million inhabitants of over 300 ethnicities scattered across 34 provinces, morbidity and mortality associated with COVID-19 in Indonesia are among the highest the world wide, and together with India and Sri Lanka, Indonesia continues to report the highest number of new cases and new deaths in Southeast Asia, thus contributing to the global burden of COVID-19 cases (8). Global statistics on February 17, 2021 revealed that Indonesia reported a large number of new cases (9687) and 192 new deaths, which marked more than a million confirmed cases and 33788 deaths since the first case was reported in March 2020 (9).

Although the Indonesian government has implemented certain interventions, including quarantine, travel restrictions, social distancing, and health education (e.g., encouraging wearing masks and hand washing), the virus continues to spread through community transmission (10). The fundamental strategy for hospitals and health workers has been for essential core health services to be intensified to deal with COVID-19 cases; however, the country has struggled to prevent community transmission. The high number of health worker deaths due to COVID-19 invited speculation on health workers' job insecurity, insufficient health supplies, and inadequate health facilities and resources (10). Thus, the trend of a high number of newly confirmed cases and new deaths due to COVID-19 is still tracking nationally (11).

As Indonesia continues its effects to reduce the number of new confirmed cases and new deaths, the incidence of stigma toward COVID-19 survivors in social media has become a serious concern (11). People who have recovered from SARS-CoV-2 infection may experience multiple types of stigma, such as anticipated stigma, i.e., fear of being tested for SARS-CoV-2, perceived stigma, i.e., feeling judged by others, and internalized stigma, i.e., experiencing shame and self-rejection (1). Many COVID-19 survivors have even reported discrimination, stereotyping, and job loss as a result of people associating them with a deadly disease (6,12). Social stigma has also negatively affected social justice for COVID-19 survivors because a stigmatized person cannot actively participate in society (13). Some COVID-19 survivors have suffered severe mental distress even after discharge and rehabilitation (14,15). All of these phenomena can reduce the quality of life and mental health of COVID-19 survivors (16,17)

The Quality of Life (QoL) scale is an important measurement of the impact of COVID-19 infection on the physical, mental, and social domains of COVID-19 survivors. Assessing QoL helps health care providers identify key factors affecting QoL and recognize the aspects of COVID-19 management that can be improved to enhance the QoL of COVID-19 survivors (18). A total of more than one million confirmed recovered COVID-19 cases out of more than six million tested in Indonesia raises the question of the needs of COVID-19 survivors when discharged from the hospital (19). An understanding of COVID-19 survivors' stigma associated with mental health and QoL is critical and will enable policy-makers to better understand the patterns of the pandemic and design more targeted programs for this group. To date, few studies have used primary data to evaluate this stigma and its impact on COVID-19 survivors, and none have focused on Indonesia. Therefore, the present study aimed to expand upon and quantify stigma and its impact on the QoL and mental health status of the general community of COVID-19 survivors.

Materials and methods

Design and participants

We conducted a cross-sectional study of adult COVID-19 survivors in East Java Province, one of Indonesia's 34 provinces. According to statistics, East Java has one of the highest numbers of confirmed COVID-19 cases, deaths, and recoveries (7,9). Adults aged 20 or older who recovered from COVID-19 in Indonesia were recruited from a COVID-19 Survivors Community registry. The study was conducted over two months from October 1 to December 1, 2020. The number of required samples was calculated using a 95% confidence level, and an assumed 50% distribution of results (19), with a minimum sample size of 334 required. Participants in the study were COVID-19 survivors who were previously diagnosed as SARS-CoV-2 positive from a PCR test, treated in hospital, and proven to be SARS-CoV-2 negative by their latest PCR test. The COVID-19 survivors enrolled in our study were defined as older than 20 years of age and of either gender by convenience sampling. COVID-19 survivors were eligible for the study if they were willing and able to participate and provided online informed

consent. All participants provided digitally signed informed consent. A total of 547 COVID-19 survivors agreed and consented to participate in the study. This study was approved by the Health Ethics Committee, Faculty of Nursing, Airlangga University, under reference number 2105-KEPK. The Strengthening the Reporting of Observational studies in Epidemiology (STROBE) statement was used as the standard for writing this study, and all of the methods used were performed in accordance with the relevant guidelines and regulations (20).

Procedures

Recruitment of participants was conducted through an online platform, the COVID-19 Survivors Community registry. Potential respondents were identified from this registry, and an invitation via a one-to-one private WhatsApp message was sent to each survivor. Their responses were obtained by data collectors (aged > 20 years) trained in research methods, and they were neither students nor trainees. Once the data collectors received feedback from the COVID-19 survivors, they were assessed for eligibility against certain criteria. The respondents who met the criteria were provided with brief information about the study, and those who agreed to participate were enrolled and invited to participate via questionnaires, which were circulated through an online platform. Those who were interested in joining the survey were asked to voluntarily fill out the online form.

In this study, we measured three aspects of post-COVID-19 life: stigma, QoL, and mental health. All the questionnaires were translated into Bahasa Indonesia and pilot tested prior to the study. Validation was conducted before using this measurement tool. Stigma among COVID-19 survivors was measured using the Berger HIV Stigma Scale questionnaire, which was adapted for COVID-19 stigma (21). Cronbach's alpha was used to measure the internal consistency of the scale, and factorial analysis was used to adapt the questionnaire. Then, the questionnaire responses were divided using the mean score into three categories: low, medium, and high.

The second questionnaire utilized was the WHO Quality of Life Brief Form (WHOQOL-BREF), which originally contained 26 items. The current study used the WHOQOL-BREF Indonesian version (22), which has proven to be reliable and valid across many different populations (23). A five-point Likert scale was used for the WHOQOL-BREF. Each item was scored from 1 (the worst condition) to 5 (the best condition), with higher scores representing a better QoL; moreover, questions 3, 4, and 26 had a negative value. In addition, the WHOQOL-BREF includes four domains: physical (questions 3, 4, 10, 15, 16, 17, and 18), psychological (questions 5, 6, 7, 11, 19, and 26), social (20, 21, and 22), and environmental (8, 9, 12, 13, 14, 23, 24, and 25) (24). Questions 1 and 2 ask the participants to assess their overall QoL and health in general. We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL based on a previous study (25).

The Mental Health Inventory-38 was used to assess the mental health state of COVID-19 survivors (26). The questionnaire consists of two dimensions: psychological well-being and

psychological distress. These scales encompass various subscales: positive affect and emotional ties and anxiety, depression, and loss of behavioral/emotional control. Most items have a six-point Likert scale, while two have a 5-point scale. Each point was associated with the frequency or intensity level of the behaviors, feelings, or thoughts the person experienced. Higher scores indicated a higher level of overall mental health and its specific dimensions. Then, we categorized the total questionnaire answers into lower (< mean) and higher (> mean) mental health. Moreover, we only used the total scores and did not include the subscales, as indicated in previous studies (26,27).

Statistical analysis

Distributions of the characteristics of respondents were represented using descriptive statistics. The chi-square test was used to determine the association of stigma with mental health and quality of life faced by COVID-19 survivors. Binary logistic regression tests were performed by adjusting all variables with a p value < 0.05. The associations among variables were measured as odds ratios and 95% confidence intervals (CIs). The regression model met the requirements of both the omnibus (p value < 0.05) and the Hosmer & Lemeshow tests for goodness of fit (p value > 0.05). All statistical analyses were performed using SPSS version 20 (IBM, Chicago).

Results

Characteristics of the respondents

Table 1 depicts the characteristics of the respondents. Between October 1 and December 1, 2020, we collected responses from 580 COVID-19 survivors who voluntarily agreed to join this study. Of these, 33 individuals were excluded because they were under 20 years old; thus, the final number was 547 respondents. The baseline demographic characteristics showed a balance of male and female genders. The younger age group (52.65%) dominated over older age groups. In our study, we found that most of the respondents (287, 52.47%) did not know from whom they had contracted COVID-19 and that a majority of them isolated in the hospital (368, 67.28%). Our findings also revealed that most of the participants recovered in less than a month (452, 82.63%) and did not show any symptoms (485, 88.67%). The prevalence of medium stigma due to COVID-19 was 70.02%; the prevalence of lower QoL was 45.52%; and the prevalence of lower mental health was 49.54%. Further information about the respondents' characteristics is available in Table 1.

Bivariate analysis

Table 2 provides detailed results for the bivariate analysis and shows the variables related to QoL and mental health status. We found that the stigma faced by COVID-19 survivors ($p<0.001$) had a significant correlation with QoL and mental health. The sex ($p=0.002$) and occupation ($p=0.038$) of the COVID-19 survivors had a significant correlation with mental health.

Multivariate analysis

Table 3 presents the detailed results of the multivariate analysis. We omitted salary, pregnancy status, and symptoms because those factors failed to meet the threshold for significance. The results were adjusted for other potential confounders, as shown in Table 2. A high level of stigma was positively correlated with lower QoL and lower mental health status [p=0.038; CI=1.032-2.946; AOR=1.744 and p=0.038; CI=1.032-2.946; AOR=1.744, respectively]. Females were less likely to experience stigma related to mental health [p=0.003; CI=0.393-0.830; AOR=0.571] than men. We also discovered that laborers [p=0.047; CI=0.351-0.992; AOR=0.590] and entrepreneurs [p=0.030; CI=0.266-0.934; AOR=0.498] were less likely to experience stigma related to mental health than respondents who worked in the civil/army/teaching/lecturing fields. More detailed results can be found in Table 3.

Table 1. Characteristics of respondents (n = 547)

Variable	n	%
Sex		
Male	275	50.27
Female	272	49.73
Age		
20–30 years old	288	52.65
31–40 years old	156	28.52
>40 years old	103	18.83
Highest education level		
School	178	32.54
University	369	67.46
Occupation		
Civil/Army/Teacher/Lecturer	95	17.37
Laborer	66	12.07
Entrepreneur	113	20.66
Others	273	49.91
Salary		
Less than 1,768,776 IDR (1 USD equal to 14,000 IDR)	92	16.82
More than 1,768,777 IDR	455	83.18
Marital status		
Unmarried	208	38.03
Married	339	61.97
Pregnancy		
No	527	96.34
Yes	20	3.66
Ethnicity		
Javanese	496	90.68
Others	51	9.32
Contracted COVID-19		
Through public places	127	23.22

Variable	n	%
Through COVID-19 carrier	133	24.31
Unknown	287	52.47
Place of care		
Hospital	157	28.70
Emergency hospital	390	71.30
Place of isolation		
At home or another place	179	32.72
At hospital	368	67.28
Recovery duration		
Less than a month	452	82.63
A month or more	95	17.73
Symptoms		
No	485	88.67
Yes	62	11.33
Stigma		
Low	80	16.45
Medium	383	70.02
High	74	13.53
Quality of Life		
Lower	249	45.52
Higher	298	54.48
Mental Health		
Lower	271	49.54
Higher	276	50.46

Table 2. Bivariate analysis of quality of life and mental health among COVID-19 survivors in Indonesia

Variable	Quality of Life			Mental Health		
	Lower	Higher	*p*	Lower	Higher	*p*
Sex						
Male	128	147	0.629	155	120	0.002***
Female	121	151		118	154	
Age						
20–30 years old	126	162		148	140	
31–40 years old	74	82	0.681	78	78	0.604
>40 years old	49	54		47	56	
Highest educational level						
School	87	91	0.274	86	92	0.605
University	162	207		187	182	
Occupation						
Civil/Army/Teacher/Lecturer	40	55		54	41	
Laborer	32	34	0.778	41	25	0.038**
Entrepreneur	49	64		55	58	
Others	128	145		123	150	
Salary						
Less than 1,768,776 IDR	37	55	0.263	44	48	0.661
More than 1,768,777 IDR	212	243		229	226	
Marital status						
Unmarried	92	116	0.635	107	101	0.574
Married	157	182		166	173	
Pregnancy						
No	239	288	0.682	263	264	0.993
Yes	10	10		10	10	
Ethnicity						
Java	223	273	0.411	242	254	0.103
Others	26	25		31	20	
Contracted COVID-19						
Through public places	58	69		64	63	
Through COVID-19 carrier	56	77	0.640	67	66	0.978
Unknown	135	152		142	145	
Place of care						
Hospital	77	80	0.294	78	79	0.946
Emergency hospital	172	218		195	195	
Place of isolation						
At home or another place	79	100	0.650	86	93	0.543
At hospital	170	198		187	181	
Recovery duration						
Less than a month	210	242	0.336	229	223	0.441
A month or more	39	56		44	51	
Symptoms						
No	222	263	0.787	244	241	0.600

Variable	Quality of Life			Mental Health		
	Lower	Higher	*p*	Lower	Higher	*p*
Yes	27	35		29	33	
Stigma						
Low	22	68		25	65	
Medium	182	201	0.000***	197	186	0.000***
High	45	29		51	23	

**p<0.1; **p<0.05; ***p<0.01*

Table 3. Multivariate analysis of quality of life and mental health among COVID-19 survivors in Indonesia

Variable	Quality of Life			Mental Health		
	AOR	CI 95%	p	AOR	CI 95%	p
Sex						
Male	Ref.			Ref.		
Female	0.963	[0.667-1.391]	0.842	0.571	[0.393-0.830]	0.003***
Age						
20–30 years old	Ref.			Ref.		
31–40 years old	1.305	[0.746-2.282]	0.351	0.682	[0.386-1.206]	0.188
>40 years old	1.107	[0.655-1.870]	0.705	0.890	[0.521-1.520]	0.670
Highest educational level						
School	Ref.			Ref.		
University	0.898	[0.598-1.348]	0.603	1.381	[0.911-2.094]	0.129
Occupation						
Civil/Army/Teacher/Lecturer	Ref.			Ref.		
Laborer	1.430	[0.857-2.387]	0.171	0.590	[0.351-0.992]	0.047**
Entrepreneur	1.216	[0.662-2.234]	0.528	0.498	[0.266-0.934]	0.030**
Others	1.222	[0.764-1.954]	0.403	0.788	[0.491-1.264]	0.322
Marital status						
Unmarried	Ref.			Ref.		
Married	1.008	[0.642-1.581]	0.947	0.980	[0.620-1.547]	0.930
Ethnicity						
Java	Ref.			Ref.		
Others	1.270	[0.679-2.377]	0.455	1.851	[0.974-3.517]	0.060
Contracted COVID-19						
Through public places	Ref.			Ref.		
Through COVID-19 carrier	1.099	[0.712-1.697]	0.669	0.939	[0.604-1.460]	0.780
Unknown	1.282	[0.827-1.897]	0.267	0.921	[0.590-1.436]	0.716
Place of Care						
Hospital	Ref.			Ref.		
Emergency hospital	0.886	[0.711-1.543]	0.551	1.023	[0.683-1.534]	0.912
Place of isolation						
At home or another place	Ref.			Ref.		
At hospital	1.048	[0.788-1.759]	0.813	0.891	[0.602-1.320]	0.566
Recovery duration						

Variable	Quality of Life			Mental Health		
	AOR	CI 95%	p	AOR	CI 95%	p
Less than a month	Ref.			Ref.		
A month or more	0.790	[0.484-1.289]	0.346	0.816	[0.602-1.320]	0.566
Stigma						
Low	Ref.			Ref.		
Medium	4.874	[2.451-9.691]	0.000***	5.354	[2.671-10.734]	0.000***
High	1.744	[1.032-2.946]	0.038**	1.840	[1.058-3.199]	0.031**

*p<0.1; **p<0.05; ***p<0.01; AOR: Adjusted Odds Ratio; CI: Confidence Interval

Discussion

In the Indonesian setting, confirmed COVID-19 cases and deaths as well as recovered cases continue to be reported; however, research on issues related to stigma, QoL and mental health status among COVID-19 survivors is currently limited. COVID-19 survivors seem to be vulnerable in the community, putting them at the greatest risk in the general population. We found that a high level of stigma was positively correlated with lower QoL and mental health status among Indonesian COVID-19 survivors. Our findings point toward stigmatization among COVID-19 survivors and reveal the need to develop specific programs for targeted groups.

Pandemics may increase stigmatization, as previously observed during the severe acute respiratory syndrome (SARS) epidemic and the bubonic plague (28,29). The stigma and fear that has developed alongside COVID-19 is likely due to the uncertain characteristics and course of the disease as well as how it is treated. This is especially true when there are limited approved treatments with unpredictable outcomes, which may generate negative psychological responses. Thus, COVID-19 survivors are likely to be labeled and discriminated against because of the perceived connotations of and links to the disease (30). In addition, most countries were not prepared for the pandemic, thus exacerbating chronic inequities and increasing the mortality rate (31–33). A similar study from Hong Kong found that COVID-19 survivors experienced a high level of externalized stigmatization compared to those with HIV/AIDS and tuberculosis. The stigma that occurs in the community is due to the fear that survivors can still transmit COVID-19, which is due to a lack of accurate knowledge and information (34,35) The stigma experienced by survivors can increase their suffering and cause them to hide symptoms to avoid discrimination. In addition, they may hide their medical history and information about disease transmission, which can facilitate transmission in the community and impact how the pandemic is controlled (30). Thus, such an environment can fuel harmful stereotypes and undermine social cohesion. Moreover, stigma can lead people to physical violence and hate crimes (31). Creating a safe environment and providing respectful care may result in better treatment for COVID-19 survivors when they return to their communities. In addition, governments should focus on programs for disseminating the

facts about COVID-19 across sectors by community leaders, mass media, artists or social influencers (36). The subsequent increase in knowledge can lessen the anxiety associated with the COVID-19 pandemic.

In our study, stigma among COVID-19 survivors remained a salient issue that was significantly associated with QoL. A high level of stigma was positively associated with lower QoL. These findings are consistent with those of studies conducted among health care workers in Italy and Egypt (37,38). Considering that stigma among COVID-19 survivors is a pressing issue for individuals, the community, and health care workers, there is still a lack of research into the relationship between stigma and QoL among COVID-19 survivors in the community. More data are needed to scrutinize the impact of stigma on individual QoL. The only study explaining the mechanism of stigma on QoL was conducted with regard to HIV (39). In addition, our findings that COVID-19-related stigma has a significant correlation with survivors' mental health are consistent with a previous study detailing how stigmatization is related to a high possibility of having poor mental health (40). COVID-19 survivors may experience excess stress from stigma and discrimination, which may ultimately lead to mental disturbances. The stigmatization process occurs as a result of fear and being held responsible for contracting COVID-19 in the community. When this happens, individuals begin to gossip, become too interested in their COVID-19 experiences, and become wary of interacting with survivors. Such behavior leads to dread in disclosing a positive COVID-19 status as well as an unwillingness to meet new individuals, particularly those from high-risk groups (41). Finally, negative effects on social interactions are associated with a reduction in the overall quality of life and mental health of the individual.

In this study, we found that females were less likely to experience stigma related to mental health than males; however, females present significantly higher levels of stress and anxiety and poorer mental health statuses (42). Males also face problems associated with work, income, family, and life transition factors that have an impact on stress and mental disorders. Additionally, the lack of counseling facilities for men associated with stereotypes of masculinity needs further attention (43,44). During the COVID-19 pandemic, male survivors also experienced impacts on work, income, and self-actualization, which promote the development of mental disorders (45,46). COVID-19 survivors have struggled to lead a meaningful life and have been burdened with mental health issues (47,48). The significant correlation between men and mental health leading to worse outcomes in COVID-19 has been supported by other studies in China (49). However, understanding and providing a psychological consultation room can help reduce the psychological burden experienced by males.

We also discovered that laborers and entrepreneurs were less likely to experience stigma related to mental health. Testing positive for COVID-19 while working as a laborer may cause insecurity due to lost work productivity. However, a good and conducive work environment can provide material, psychological and social support. Previous research has stated that a good work environment can provide support for COVID-19 survivors to recover quickly and

promote enthusiasm during quarantine (50,51). Such support can be in the form of food, money, and daily necessities. The WHO stated that the effects of stigma on mental health among health care workers, patients, and survivors could be avoidable through adequate education through the media (6). Understanding the primary drivers of misinformation is critical to preventing misjudgment in the community and increasing the sense of brotherhood among individuals.

In our research, the respondents were asked specific questions about several elements of their QoL and mental health. Standardized surveys measuring QoL and mental health status can reduce information bias (26), which we believe is a strength of our study. To our knowledge, this was the first analysis of stigma against Indonesian COVID-19 survivors associated with mental health indicators and QoL. The results call for urgent action to develop programs to destigmatize COVID-19 at every level, ranging from personal to policy. The main limitation of this study is its cross-sectional design, which cannot explain causality. Additionally, the study was conducted only in East Java Province; thus, the results of this study have limited generalizability because the respondents are representatives of the Indonesian population.

Conclusions

A considerable proportion of the COVID-19 survivors in this cross-sectional study experienced COVID-19-related stigmatization at a medium level. Stigma among COVID-19 survivors has a close relationship with their QoL and mental health. These findings highlight the need for specific research and targeted interventions to address these issues for COVID-19 survivors. Given that Indonesia has suffered a high number of confirmed COVID-19 cases and deaths, the stigma experienced by COVID-19 survivors should be more broadly studied. COVID-19 survivors are a vulnerable group, and it is essential to identify new strategies to promote the well-being of this group as soon as possible. Our findings can inform policymakers to ensure the availability of a safe environment supported by respectful care. Urgent action is required to destigmatize COVID-19 at every level, ranging from personal to policy.

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References

1. Sotgiu G, Dobler CC. Social stigma in the time of coronavirus disease 2019. Eur Respir J. 2020 Aug;56(2):2002461.

2. Donthu N, Gustafsson A. Effects of COVID-19 on business and research. J Bus Res. 2020/06/09. 2020 Sep;117:284–9.

3. World Health Organization. Coronavirus disease (COVID-19) [Internet]. [cited 2021 Feb 23]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019?gclid=Cj0KCQjwhIP6BRCMARIsALu9Lfnbx3ahXR8sSvIS65OyGIzjUfvucEyuf6mqVIHlN4tY9itTDGwlOxIaAgkgEALw_wcB

4. Malecki KMC, Keating JA, Safdar N. Crisis Communication and Public Perception of COVID-19 Risk in the Era of Social Media. Clin Infect Dis. 2020 Jun;

5. World Health Organization. Social stigma associated with Covid-19. WHO. Geneva, Switzerland: WHO; 2021.

6. Bagcchi S. Stigma during the COVID-19 pandemic. Lancet Infect Dis. 2020 Jul;20(7):782.

7. World Health Organization. Indonesia WHO Coronavirus disease. Geneva, Switzerland: WHO; 2021.

8. World Health Organization. Weekly epidemiological update [Internet]. 2021 [cited 2021 Feb 23]. Available from: https://www.who.int/publications/m/item/weekly-epidemiological-update---16-february-2021

9. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report 43 [Internet]. 2021 [cited 2021 Feb 23]. Available from: https://cdn.who.int/media/docs/default-source/searo/indonesia/covid19/external-situation-report-43_17-february.pdf?sfvrsn=1889cdf9_5

10. Djalante R, Lassa J, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B, et al. Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. Prog Disaster Sci. 2020 Apr;6:100091.

11. KawalCovid19. Informasi terkini Covid-19 di Indonesia. KawalCovid19. 2021.

12. Mahmud A, Islam MR. Social Stigma as a Barrier to Covid-19 Responses to Community Well-Being in Bangladesh. Int J Community Well-Being. 2020 Aug;

13. Bailey TC, Merritt MW, Tediosi F. Investing in justice: ethics, evidence, and the eradication investment cases for lymphatic filariasis and onchocerciasis. Am J Public Health. 2015 Apr;105(4):629–36.

14. Chwaszcz J, Palacz-Chrisidis A, Wiechetek M, Bartczuk R, Niewiadomska I, Wośko P, et al. Quality of life and its factors in the COVID19 pandemic situation. Results of Stage 1 studies during the pandemic growth period. 2020;

15. Pierce M, Hope H, Ford T, Hatch S, Hotopf M, John A, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. The Lancet Psychiatry. 2020;7(10):883–92.

16. Bargon C, Batenburg M, van Stam L, van der Molen DM, van Dam I, van der Leij F, et al. The impact of the COVID-19 pandemic on quality of life, physical and psychosocial wellbeing in breast cancer patients – a prospective, multicenter cohort study. Eur J Cancer. 2020;138:S17–S17.

17. Batawi S, Alraddadi B, Tarazn N, Al-Raddadi R, Sindi A, Uyeki T. Quality of Life Among Survivors of Middle East Respiratory Syndrome Corona Virus. Open Forum Infect Dis. 2016 Dec;3(suppl_1).

18. Testa MA, Simonson DC. Assessment of Quality-of-Life Outcomes. N Engl J Med. 1996 Mar;334(13):835–40.

19. Price JH, Daek JA, Murnan J, Dimmig J, Akpanudo S. Power analysis in survey research: Importance and use for health educators. Am J Heal Educ. 2005;36(4):202–9.

20. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007 Oct;4(10):e296–e296.

21. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale¶. Res Nurs Health. 2001;24(6):518–29.

22. World Health Organization. WHOQOL-BREF versi Indonesia. World Heal Organ Qual Life (WHOQOL-BREF). 2004;1–5.

23. Anwar SA, Arsyad DS, Dwinata I, Ansar J, Rachmat M. Quality life of PROLANIS participants using WHOQOL BREF Indonesian version: A community in primary health care. Enfermería Clínica. 2020 Mar;30:213–7.

24. World Health Organization. Introduction, Administration, Scoring, and Generic Version of The Assessment. 1996;(December).

25. Silva PAB, Soares SM, Santos JFG, Silva LB. Cut-off point for WHOQOL-bref as a measure of quality of life of older adults. Rev Saude Publica. 2014 Jun;48(3):390–7.

26. Veit CT, Ware JE. The structure of psychological distress and well-being in general populations. J Consult Clin Psychol [Internet]. 1983 [cited 2021 Feb 23];51(5):730–42. Available from: https://pubmed.ncbi.nlm.nih.gov/6630688/

27. Al Mutair A, Alhajji M, Shamsan A. Emotional Wellbeing in Saudi Arabia During the COVID-19 Pandemic: A National Survey. Risk Manag Healthc Policy. 2021 Mar;Volume 14:1065–72.

28. Washer P. Representations of SARS in the British newspapers. Soc Sci Med. 2004;59(12):2561–71.

29. Murray DR, Jones DN, Schaller M. Perceived threat of infectious disease and its implications for sexual attitudes. Pers Individ Dif. 2013;54(1):103–8.

30. Dar SA, Khurshid SQ, Wani ZA, Khanam A, Haq I, Shah NN, et al. Stigma in coronavirus disease-19 survivors in Kashmir, India: A cross-sectional exploratory study. PLoS One. 2020 Nov;15(11):e0240152.

31. Eddleston M, Chowdhury FR, Mccready C. UK COVID-19 public inquiry needed to learn lessons and save lives. 2020;6736(20):177–80.

32. Horton R. Offline : Europe and COVID-19 — struggling with tragedy. Lancet [Internet]. 2021;396(10264):1713. Available from: http://dx.doi.org/10.1016/S0140-6736(20)32530-7

33. Lal A, Erondu NA, Heymann DL, Gitahi G, Yates R. Health Policy Fragmented health systems in COVID-19 : rectifying the misalignment between global health security and universal health coverage. Lancet [Internet]. 2021;397(10268):61–7. Available from: http://dx.doi.org/10.1016/S0140-6736(20)32228-5

34. Abdelhafiz AS, Alorabi M. Social Stigma: The Hidden Threat of COVID-19. Front Public Heal. 2020 Aug;8.

35. National Center for Chronic Disease Prevention. Reducing Stigma. CDC. 2021.

36. WHO SEARO. Stigma Sosial terkait dengan COVID-19. WHO. 2020.

37. Ramaci T, Barattucci M, Ledda C. Social Stigma during COVID-19 and its Impact on HCWs Outcomes. 2020;1–13.

38. Mostafa A, Sabry W, Id NSM. COVID-19-related stigmatization among a sample of Egyptian healthcare workers. 2020;1–15. Available from: http://dx.doi.org/10.1371/journal.pone.0244172

39. Zarei N, Joulaei H. The Impact of perceived stigma, quality of life, and spiritual beliefs on suicidal ideations among HIV-positive patients. AIDS Res Treat. 2018;2018.

40. Yi S, Chhoun P, Suong S, Thin K, Brody C, Tuot S. AIDS-related stigma and mental disorders among people living with HIV: a cross-sectional study in Cambodia. PLoS One [Internet]. 2015 Mar 25;10(3):e0121461–e0121461. Available from: https://pubmed.ncbi.nlm.nih.gov/25806534

41. Lohiniva A-L, Dub T, Hagberg L, Nohynek H. Learning about COVID-19-related stigma, quarantine and isolation experiences in Finland. Yourkavitch J, editor. PLoS One. 2021 Apr;16(4):e0247962.

42. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, 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. 2020;17(5).

43. Chatmon BN. Males and Mental Health Stigma. Am J Mens Health. 2020 Jul;14(4):155798832094932.

44. Affleck W, Carmichael V, Whitley R. Men's Mental Health: Social Determinants and Implications for Services. Can J Psychiatry. 2018 Sep;63(9):581–9.

45. Al Dhaheri AS, Bataineh MF, Mohamad MN, Ajab A, Al Marzouqi A, Jarrar AH, et al. Impact of COVID-19 on mental health and quality of life: Is there any effect? A cross-sectional study of the MENA region. Mahapatra B, editor. PLoS One. 2021 Mar;16(3):e0249107.

46. International Labour Organization. The impact of the COVID-19 pandemic on jobs and incomes in G20 economies. Saudi Arabia: International Labour Organization; 2020.

47. Hosey MM, Needham DM. Survivorship after COVID-19 ICU stay [Internet]. Vol. 6, Nature Reviews Disease Primers. Nature Research; 2020 [cited 2021 Feb 23]. p. 1–2. Available from: www.nature.com/nrdp

48. Wu C, Hu X, Song J, Yang D, Xu J, Cheng K, et al. Mental health status and related influencing factors of COVID-19 survivors in Wuhan, China. Clin Transl Med [Internet]. 2020 Jun 5 [cited 2021 Feb 23];10(2):e52. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/ctm2.52

49. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. 2020;395(10223):507–13.

50. Taylor H, Collinson S, Saavedra-Campos M, Douglas R, Humphreys C, Roberts DJ, et al. Lessons learnt from an outbreak of COVID-19 in a workplace providing an essential service, Thames Valley, England 2020: Implications for investigation and control. Public Heal Pract. 2021 Nov;2:100217.

51. Schnettler B, Orellana L, Miranda-Zapata E, Saracostti M, Poblete H, Lobos G, et al. Diet quality during the COVID-19 pandemic: Effects of workplace support for families

and work-to-family enrichment in dual-earner parents with adolescent children. Appetite. 2021 Nov;105823.

RESEARCH ARTICLE

Association of stigma ~~in~~with mental health and quality of life among Indonesian ~~Covid~~COVID-19 survivors

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Abstract

Background and objective

Coronavirus disease 2019 (~~Covid~~COVID-19) survivors ~~remains~~ face societal ~~the~~ stigma ~~that~~

~~exists in society~~. The study aims to analyze the association of this stigma ~~in~~with the mental health and quality of life ~~of~~faced by ~~Covid~~COVID-19 survivors.

Methods

In this cross-sectional study, we observed 547 adults who were previously documented as severe acute respiratory syndrome coronavirus (SARS-CoV-2) positive by a polymerase chain reaction (PCR) test, treated in a hospital or an emergency hospital and proven to be SARS-CoV-2 negative by their latest PCR test. We adopted the Berger HIV Stigma Scale to measure stigma~~;~~, the World Health Organization Quality of Life~~,~~ ~~the~~ Brief Form to measure quality of life~~;~~ and the Mental Health Inventory-38 to measure mental health. The chi-square and binary logistic regression tests were used to find the correlation between the variables.

Results

The multivariate analysis revealed that medium stigma was more likely related to quality of life and mental health ~~compared with~~ than low stigma. Females were less likely to experience~~have~~ stigma related to mental health ~~compared with~~than men, and respondents who worked as ~~laborer and entrepreneur~~laborers and entrepreneurs were less likely to ~~have~~ experience stigma related to mental health ~~compared~~than those who worked as ~~civil/army/teacher/lecturer. Covid~~civil workers~~s~~/army personnel~~ies~~/teachers/lecturers. COVID-19 survivors experienced medium stigma in society and lower quality of life and mental health status. We found that quality of life and mental health were affected by stigma, sex, and occupation.

Conclusion

~~Covid~~COVID-19 survivors are a vulnerable group that is~~and~~ ~~are~~ most at risk when they ~~returned~~return to their communities. Creating a safe environment and providing respectful care, including addressing complex stigma factors, is vital for developing appropriate interventions.

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has affected the worldwide population, thus creating a burden of disease and~~,~~ mortality ~~rate,~~ and an unprecedented impact on social life (1,2). According to the World Health Organization (WHO), on February 18, 2021, more than 109 million cases had been confirmed~~,~~ and approximately two million deaths had occurred across 223 countries (3). Insufficient knowledge and contradictory information about the severity of and protection against severe acute respiratory syndrome coronavirus (SARS-CoV-2) has increased anxiety among the population (1). This uncertainty and anxiety haves~~s~~ led people to easily believe vague and biased information from the ~~the~~ media, social media, and self-proclaimed experts (4). At the same time, this rapidly spreading and unpredictable pandemic has led to the imposition of social stigma and discrimination against COVID-19 survivors (5,6). According to the WHO, "all efforts must be taken to scientifically destigmatize COVID-19 instead of statutory sermons by lawmakers" (7). Usually, ~~the~~ stigma develops when people are afraid and~~,~~ believe~~ing~~ that COVID-19 survivors are still contagious.

Indonesia is one of the countries that has suffered remarkably in terms of the number of COVID-19 cases. With approximately 270 million inhabitants of over 300 ethnicities scattered across 34 provinces, morbidity and mortality associated with COVID-19 in Indonesia ~~has one of~~ are among the highest the world wide~~'s highest numbers of COVID-19 morbidity and mortality~~, and together with India and Sri Lanka, Indonesia continues to report the highest number of new cases and new deaths in ~~South East~~ Southeast Asia, thus contributing to the global burden of COVID-19 cases (8). Global statistics on February 17, 2021 revealed that Indonesia reported a large number of new cases (~~,~~9687)~~,~~ and 192 new deaths, which marked more than a million confirmed cases and 33788 deaths since the first case was reported in March 2020 (9).

Although the Indonesian ~~Government~~government has implemented ~~some~~ certain interventions, including quarantine, travel restrictions, social distancing, and health education (e.g., encouraging wearing masks and hand washing), the virus continues to spread through community transmission (10). The fundamental strategy for hospitals and health workers ~~was~~ has been for essential core health services to be intensified to deal with COVID-19 cases; however, the country has struggled to prevent community transmission. The high number of health worker deaths due to COVID-19 invited speculation on health workers' job insecurity, insufficient health supplies, and inadequate health facilities and resources (10). Thus, the trend of a high number of ~~new~~newly confirmed cases and new deaths due to COVID-19 is still tracking nationally (11).

~~While determination to reduce~~As Indonesia continues its effects to reduce the number of new confirmed cases and new deaths ~~continues in Indonesia~~, t~~t~~he incidence of stigma toward COVID-19 survivors in ~~has been reported in~~on social media has ~~,~~ become~~ing~~ a serious concern (11). People who have recovered from ~~a~~ SARS-CoV-2 infection may experience multiple types of stigma, such as anticipated stigma, i.e., ~~—~~fear of being tested for SARS-CoV-2, ~~—~~perceived stigma, i.e., ~~—~~feeling judged by others, ~~—~~and internalized stigma, i.e., ~~—~~experiencing shame and self-rejection (1). Many COVID-19 survivors have even reported discrimination, stereotyping, and job loss as a result of people associating them with a deadly disease (6,12). Social stigma has also negatively affected social justice for COVID-19 survivors because~~, as~~ a stigmatized person cannot actively participate in society (13). Some COVID-19 survivors have suffered severe mental distress even after discharge and rehabilitation (14,15). All of these phenomena can reduce the quality of life and mental health of COVID-19 survivors (16,17)

The Quality of Life (QoL) scale is an important measurement of the impact of COVID-19 infection on the physical, mental, and social domains of COVID-19 survivors. Assessing QoL helps health care~~healthcare~~ providers ~~to~~ identify key factors affecting QoL and ~~to~~ recognize the aspects of COVID-19 management that can be improved ~~in order~~ to enhance the QoL of COVID-19 survivors (18). A total of more than one million confirmed recovered COVID-19 cases out of more than six million tested in Indonesia raises the question of the needs of COVID-19 survivors when discharged from the hospital (19). An understanding of COVID-19 survivors' stigma associated with mental health and QoL is critical and will enable policy-makers~~policymakers~~ to better understand the patterns of the pandemic and design more targeted programs for this group. To date, ~~not many~~ few studies have used primary data to evaluate this stigma and its impact on COVID-19 survivors, and none have focused on Indonesia. Therefore, the present study aimed to expand upon and quantify stigma and its impact on the QoL and mental health status of the general community of COVID-19 survivors.

Materials and methods

Design and participants

We conducted a cross-sectional study of adult COVID-19 survivors in ~~the~~ East Java ~~province~~Province, one of ~~the~~ Indonesia's 34 provinces. According to ~~the~~ statistics, East Java has one of the highest numbers of confirmed COVID-19 ~~confirmed~~ cases, deaths, and ~~recovered~~recoveries (7,9). Adults aged 20 or older who recovered from COVID-19 in Indonesia were recruited from a COVID-19 Survivors Community registry. The study was conducted over two months from October 1 to December 1, 2020. The number of required samples was calculated using a 95% confidence level, and an assumed 50% distribution of results (19), with a~~the~~ minimum sample size of 334 ~~was~~ required. Participants in the study were COVID-19 survivors who were previously diagnosed as SARS-CoV-2 positive from a PCR test, treated in hospital, and proven to be SARS-CoV-2 negative by their latest PCR test. The COVID-19 survivors enrolled in our study were defined as older than 20 years of age and of either gender

by convenience sampling. COVID-19 survivors were eligible for the study if they were willing and able to participate and provided online informed consent. All participants provided digitally signed informed consent. A total of 547 COVID-19 survivors agreed and consented to participatingparticipate in the study. This study was approved by the Health Ethics Committee, Faculty of Nursing, Airlangga University, with under reference number 2105-KEPK. The Strengthening the Reporting of Observational studies in Epidemiology (STROBE) statement was used as the standard for writing this study, and all of the methods used methods were performed in accordance with the relevant guidelines and regulations (20).

Procedures

Recruitment of participants was conducted through an online platform, the COVID-19 Survivors Community registry. Potential respondents were identified from this registry, and an invitation via a one-to-one private WhatsApp message was sent to each survivor. Their responses were obtained by data collectors (aged > 20 years) trained in research methods, all of whom wereand they were neither students nor trainees. Once the data collectors received feedback from the COVID-19 survivors, they were assessed for eligibility against certain criteria. The respondents who met the criteria were provided with brief information about the study, and those who agreed to participate were enrolled and invited to participate via questionnaires, which were circulated through an online platform. Those who were interested in joining the survey were asked to voluntarily fill out the online form.

In this study, we measured three aspects of post-CovidCOVID-19 life: stigma, QoL, and mental health. All the questionnaires were translated into Bahasa Indonesia and were pilot testt tested prior to the study. Validation was conducted before using this measurement tool. Stigma among COVID-19 survivors was measured using the Berger HIV Stigma Scale questionnaire, which was adapted for COVID-19 stigma (21). A Cronbach Cronbach's alpha was performedused to measure the scale internal consistency of the scale, and factorial analysis was used to adapt the questionnaire. Then, the questionnaire responses were divided using the mean score into three categories: low, medium, and high.

The second questionnaire utilized was the WHO Quality of Life Brief Form (WHOQOL-BREF), which originally contained 26 items. The current study used the WHOQOL-BREF Indonesian version (22), which has proven to be reliable and valid across many different populations (23). A five-point Likert scale was used for the WHOQOL-BREF. Each item was scored from 1 (the worst condition) to 5 (the best condition), and questions 3, 4, and 26 had a negative value, with. hHence, higher scores representinged a better QoL; moreover, questions 3, 4, and 26 had a negative value. In addition, the WHOQOL-BREF includes four domains: physical (questions 3, 4, 10, 15, 16, 17, and 18), psychological (questions 5, 6, 7, 11, 19, and 26), social (20, 21, and 22), and environmental (8, 9, 12, 13, 14, 23, 24, and 25) (24). Questions 1 and 2 ask the participants to assess their overall QoL and health in general. We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL

based ony followed thefollowing a previous study (25).

The Mental Health Inventory-38 was used to assess the mental health state of COVID-19 survivors (26). The questionnaire consists of two dimensions: psychological well-being and psychological distress. These scales encompass various subscales: positive affect and emotional ties and anxiety, depression, and loss of behavioral/emotional control, respectively. Most items have a six-point Likert scale, while two have a 5-point scale. Each point was associated with the frequency or intensity level of the behaviors, feelings, or thoughts the person experienced. Higher scores indicated a higher level of overall mental health and its specific dimensions. Then, we categorized the total questionnaire answers into lower (< mean) and higher (> mean) mental health. We highlighted that none of the subscales was used,Moreover, we only used the total scores and did not include the subscales, as indicated in, and refer to previous studies (26,27).

Statistical analysis

Distributions of the characteristiccharacteristics of respondents waswere represented using descriptive statistics. The chi-square test was used to determine the association of stigma inwith mental health and quality of life faced by CovidCOVID-19 survivors. Binary logistic regression tests were performed by adjusting all variables with a p valuep-value of < 0.05. The associations among variables were measured as an odds ratioratios and at a 95% confidence interval (CIintervals (CIs). The regression model met the requirements of both the omnibus (p valuep-value < 0.05) and the Hosmer & Lemeshow tests for goodness of fit (p valuep-value > 0.05). All statistical analyses were performed using SPSS version 20 (IBM, Chicago).

Results

Characteristics of the respondents

Table 1 depicts the characteristics of the respondents. Between October 1 and December 1, 2020, we collected responses from 580 COVID-19 survivors who voluntarily agreed to join this study. Of these, 33 individuals were excluded asbecause they were under 20 years old, thus yielding; thus, the thea final number wasof 547 respondents. The bBaseline demographic characteristics showed a balance of male and female genders. The younger age group (52.65%) dominated over older age groups. In our study, we found that most of the respondents (287, 52.47%) did not know from whom they had contracted COVID-19, and that a majority of them isolated in the hospital (368, 67.28%). Our findings also revealed that most of the participants recovered in less than a month (452, 82.63%), and did not show any symptoms (485, 88.67%). The prevalence of medium stigma due to COVID-19 was 70.02%; the. The prevalence of lower QoL was 45.52%; and, whereas the prevalence of lower mental health was 49.54%. Further information about the respondents' characteristics is available in Table 1.

Bivariate analysis

Table 2 provides ~~the~~ detailed results for~~of~~ the bivariate analysis and~~. It~~ shows the variables related to QoL and mental health status. We found that the stigma faced by ~~Covid~~COVID-19 survivors (p<0.001) had a significant correlation with QoL and mental health. The sex (p=0.002) and occupation (p=0.038) of the ~~Covid~~COVID-19 survivors had a significant ~~a~~ correlation with mental health.

Multivariate analysis

Table 3 presents the detailed results of the multivariate analysis. We omitted salary, pregnancy status, and symptoms because those factors failed to meet the threshold for significance. The results were adjusted for other potential confounders, as shown in Table 2. A high level of stigma was positively correlated with lower QoL and lower mental health status [p=0.038; CI=1.032-2.946; AOR=1.744 and p=0.038; CI=1.032-2.946; AOR=1.744, respectively]. Females were less likely to experience stigma related to mental health [p=0.003; CI=0.393-0.830; AOR=0.571] than men. We also discovered that laborers [p=0.047; CI=0.351-0.992; AOR=0.590] and ~~entrepreneur~~entrepreneurs [p=0.030; CI=0.266-0.934; AOR=0.498] were less likely to experience stigma related to mental health than respondents who worked in the~~as~~ civil/army/teachinge~~r~~/lecturing fields~~er~~. More detailed results can be found in Table 3.

Table 1. Characteristics of respondents (n = 547)

Variable	n	%
Sex		
Male	275	50.27
Female	272	49.73
Age		
20–30 years old	288	52.65
31–40 years old	156	28.52
>40 years old	103	18.83
Highest education level		
School	178	32.54
University	369	67.46
Occupation		
Civil/Army/Teacher/Lecturer	95	17.37
Laborer	66	12.07
Entrepreneur	113	20.66
Others	273	49.91
Salary		
Less than 1,768,776 IDR (1 USD equal to 14,000 IDR)	92	16.82
More than 1,768,777 IDR	455	83.18
Marital status		
Unmarried	208	38.03
Married	339	61.97
Pregnancy		

Variable	n	%
No	527	96.34
Yes	20	3.66
Ethnicity		
Javanese	496	90.68
Others	51	9.32
Contracted COVID-19		
Through public places	127	23.22
Through COVID-19 carrier	133	24.31
UnDon't known	287	52.47
Place of care		
Hospital	157	28.70
Emergency hospital	390	71.30
Place of isolation		
At home or another place	179	32.72
At hospital	368	67.28
Recovery duration		
Less than a month	452	82.63
A month or more	95	17.73
Symptoms		
No	485	88.67
Yes	62	11.33
Stigma		
Low	80	16.45
Medium	383	70.02
High	74	13.53
Quality of Life		
Lower	249	45.52
Higher	298	54.48
Mental Health		
Lower	271	49.54
Higher	276	50.46

Table 2. Bivariate analysis of quality of life and mental health among ~~Covid~~COVID-19 survivors in Indonesia

Variable	Quality of Life			Mental Health		
	Lower	Higher	*p*	Lower	Higher	*p*
Sex						
Male	128	147	0.629	155	120	0.002***
Female	121	151		118	154	
Age						
20–30 years old	126	162		148	140	
31–40 years old	74	82	0.681	78	78	0.604
>40 years old	49	54		47	56	
Highest educational level						
School	87	91	0.274	86	92	0.605
University	162	207		187	182	
Occupation						
Civil/Army/Teacher/Lecturer	40	55		54	41	
Laborer	32	34	0.778	41	25	0.038**
Entrepreneur	49	64		55	58	
Others	128	145		123	150	
Salary						
Less than 1,768,776 IDR	37	55	0.263	44	48	0.661
More than 1,768,777 IDR	212	243		229	226	
Marital status						
Unmarried	92	116	0.635	107	101	0.574
Married	157	182		166	173	
Pregnancy						
No	239	288	0.682	263	264	0.993
Yes	10	10		10	10	
Ethnicity						
Java	223	273	0.411	242	254	0.103
Others	26	25		31	20	
Contracted COVID-19						
Through public places	58	69		64	63	
Through COVID-19 carrier	56	77	0.640	67	66	0.978
Un~~Don't~~known	135	152		142	145	
Place of care						
Hospital	77	80	0.294	78	79	0.946
Emergency hospital	172	218		195	195	
Place of isolation						
At home or another place	79	100	0.650	86	93	0.543
At hospital	170	198		187	181	
Recovery duration						
Less than a month	210	242	0.336	229	223	0.441
A month or more	39	56		44	51	
Symptoms						
No	222	263	0.787	244	241	0.600

Variable	Quality of Life			Mental Health		
	Lower	Higher	*p*	Lower	Higher	*p*
Yes	27	35		29	33	
Stigma						
Low	22	68		25	65	
Medium	182	201	0.000***	197	186	0.000***
High	45	29		51	23	

**p<0.1; **p<0.05; ***p<0.01*

Table 3. Multivariate analysis ~~on~~of quality of life and mental health among ~~Covid~~COVID-19 survivors in Indonesia

Variable	Quality of Life			Mental Health		
	AOR	CI 95%	p	AOR	CI 95%	p
Sex						
Male	Ref.			Ref.		
Female	0.963	[0.667-1.391]	0.842	0.571	[0.393-0.830]	0.003***
Age						
20–30 years old	Ref.			Ref.		
31–40 years old	1.305	[0.746-2.282]	0.351	0.682	[0.386-1.206]	0.188
>40 years old	1.107	[0.655-1.870]	0.705	0.890	[0.521-1.520]	0.670
Highest educational level						
School	Ref.			Ref.		
University	0.898	[0.598-1.348]	0.603	1.381	[0.911-2.094]	0.129
Occupation						
Civil/Army/Teacher/Lecturer	Ref.			Ref.		
Laborer	1.430	[0.857-2.387]	0.171	0.590	[0.351-0.992]	0.047**
Entrepreneur	1.216	[0.662-2.234]	0.528	0.498	[0.266-0.934]	0.030**
Others	1.222	[0.764-1.954]	0.403	0.788	[0.491-1.264]	0.322
Marital status						
Unmarried	Ref.			Ref.		
Married	1.008	[0.642-1.581]	0.947	0.980	[0.620-1.547]	0.930
Ethnicity						
Java	Ref.			Ref.		
Others	1.270	[0.679-2.377]	0.455	1.851	[0.974-3.517]	0.060
Contracted COVID-19						
Through public places	Ref.			Ref.		
Through COVID-19 carrier	1.099	[0.712-1.697]	0.669	0.939	[0.604-1.460]	0.780
Un~~Don't~~known	1.282	[0.827-1.897]	0.267	0.921	[0.590-1.436]	0.716
Place of Care						
Hospital	Ref.			Ref.		
Emergency hospital	0.886	[0.711-1.543]	0.551	1.023	[0.683-1.534]	0.912
Place of isolation						
At home or another place	Ref.			Ref.		
At hospital	1.048	[0.788-1.759]	0.813	0.891	[0.602-1.320]	0.566
Recovery d~~D~~uration						

Variable	Quality of Life			Mental Health		
	AOR	CI 95%	p	AOR	CI 95%	p
Less than a month	Ref.			Ref.		
A month or more	0.790	[0.484-1.289]	0.346	0.816	[0.602-1.320]	0.566
Stigma						
Low	Ref.			Ref.		
Medium	4.874	[2.451-9.691]	0.000***	5.354	[2.671-10.734]	0.000***
High	1.744	[1.032-2.946]	0.038**	1.840	[1.058-3.199]	0.031**

*p<0.1; **p<0.05; ***p<0.01; AOR: Adjusted Odds Ratio; CI: Confidence Interval

Discussion

In the ~~Indonesia~~Indonesian setting, confirmed COVID-19 ~~confirmed~~ cases and deaths~~,~~ as well as recovered cases~~,~~ continue to be reported; however, research on issues related to stigma~~, and~~ QoL and mental health status among COVID-19 survivors is currently limited. COVID-19 survivors seem to be vulnerable in the community, putting them at the greatest~~most~~ risk in the general population. We found that a high level of stigma was positively correlated with lower QoL and mental health status among Indonesian COVID-19 survivors. Our findings point toward stigmatization among COVID-19 survivors and reveal the need to develop specific programs for ~~the~~ targeted groups.

Pandemics may increase stigmatization, ~~,~~ as ~~,~~ previously ~~seen~~ observed during the severe acute respiratory syndrome (SARS) epidemic and the bubonic plague (28,29). The stigma and fear that has developed alongside COVID-19 is likely due to the uncertain characteristics and course of the disease~~,~~ as well as how it is treated. This is especially true ~~while~~when there are limited approved treatments with unpredictable outcomes, which may generate negative psychological responses. Thus, COVID-19 survivors are likely to be labeled~~labelled~~ and discriminated against because of the perceived connotations of and links to the disease (30). In addition, most countries were not prepared for the pandemic, thus exacerbating chronic inequities and increasing the mortality rate (31–33). A similar study from Hong Kong found that COVID-19 survivors ~~received~~ experienced a high level of externalized stigmatization compared to those with HIV/AIDS and tuberculosis. The stigma that occurs in the community is due to the fear that survivors can still transmit COVID-19, which~~. This~~ is due to a lack of accurate knowledge and information (34,35) The stigma experienced by survivors can increase their suffering and cause them to hide symptoms ~~in order~~ to avoid discrimination. In addition, they may hide their medical history and information about disease transmission, which can facilitate transmission in the community and impact how the pandemic is controlled (30). Thus, such an environment can fuel harmful stereotypes and undermine social cohesion. Moreover, stigma can lead people to physical violence and hate crimes (31). Creating a safe environment and providing respectful care may result in better treatment for COVID-19 survivors when they return to their communities. In addition, governments should

focus on ~~the~~ programs for disseminating the facts about COVID-19 ~~needs to be a concern for the government. It can be done~~ across sectors by~~,~~ community leaders, mass media, ~~and~~ artists or social influencers (36). ~~Thus,~~The subsequent increase in knowledge can ~~increase, and people can be calmer~~lessen the anxiety associated ~~in dealing~~ with the COVID-19 pandemic.

In our study, stigma among COVID-19 survivors ~~remains~~remained a salient issue that ~~is~~was significantly associated with QoL. A high level of stigma was positively associated with lower QoL. These findings are consistent with those of studies conducted among health care~~healthcare~~ workers in Italy~~–~~ and Egypt (37,38). Considering that stigma among COVID-19 survivors is a pressing issue for individuals, the community, and health care~~healthcare~~ workers, there is still a lack of research into the relationship between stigma and QoL among COVID-19 survivors in the community. More data ~~is~~are needed ~~in order~~ to scrutinize the impact of stigma on individual QoL. The only study explaining the mechanism of stigma on QoL was conducted with regard to HIV (39). In addition, ~~Our~~our findings ~~—~~that COVID-19-related stigma has a significant correlation with survivors' mental ~~health—is~~health ~~—~~are consistent with a previous study ~~that~~ detail~~ings~~ how stigmatization is related to a high possibility of having poor mental health (40). COVID-19 survivors may experience excess stress from stigma and discrimination, which may ultimately lead to mental disturbances. The stigmatization process occurs~~takes place~~ as a result of fear and being held responsible for contracting COVID-19 in the community. When this happens, individuals begin to gossip, ~~get~~become too interested ~~about~~in their COVID-19 experiences, and become wary of interacting with survivors. Such behavior~~This~~ leads to~~has an influence on the~~ dread in~~of~~ disclosing a positive COVID-~~19's~~19 status as well as an~~the~~ unwillingness to meet new individuals, particularly those from high-risk groups (41). Finally, negative effects on social interactions are associated with a reduction in the overall quality of life and mental health of the individual.

In this study, we found that females were less likely to experience stigma related to mental health than ~~male~~males; however, females present~~. Being female, in turn, is reported to be associated with~~ significantly higher levels of stress and~~,~~ anxiety~~,~~ and poorer mental health statuses (42). M~~However, male~~males also face problems ~~that have an impact on stress and mental disorders. This is due to~~ associated with work, income, family, and life transition factors that have an impact on stress and mental disorders. ~~Not only that~~Additionally, the lack of counseling ~~service~~ facilities ~~facilities~~ for men ~~due to the issue of~~associated with stereotypes of masculinity needs further attention (43,44). During the COVID-19 pandemic, male survivors also experienced ~~an~~ impacts on work, income, and self-actualization, ~~making it easier for them to~~which promote the development of ~~experience~~ mental disorders (45,46). ~~While it~~ It ~~was well documented that~~ COVID-19 survivors have struggled to lead a meaningful life and have been~~were~~ burdened with mental health issues (47,48). The significant correlation between men~~being male~~ and mental health leading to~~that caused~~ worse outcomes in COVID-19 has been supported by other studies in China (49). However, understanding and providing a psychological consultation room can help reduce the psychological burden experienced by

~~male~~males.

We also discovered that laborers and entrepreneurs were less likely to experience stigma related to mental health. Testing positive for COVID-19 while working as a laborer may cause insecurity due to lost work productivity. However, a good and conducive work environment can provide material, psychological and social support. Previous research has stated that a good work environment can provide support for COVID-19 survivors to recover quickly and promote~~be~~ enthusiasm~~tic~~ during quarantine (50,51). ~~The~~ Such support ~~provided~~ can be in the form of food, money, and daily necessities. The WHO stated that the effects of stigma on ~~that affected~~ mental health among health care~~healthcare~~ workers, patients, and survivors could be avoidable through adequate education through the media (6). Understanding the primary drivers of misinformation is critical to preventing misjudgment in the community and increasing the~~a~~ sense of brotherhood ~~to help each other~~among individuals.

In our research, the respondents were asked specific questions about several elements of their QoL and mental health. Standardized surveys measuring ~~the~~ QoL and mental health status can reduce information bias (26), which we believe is a strength of our study. To our knowledge, this was the first analysis of stigma against Indonesian COVID-19 survivors associated with mental health indicators and QoL. The results call for urgent action to develop programs to ~~the provision of~~ destigmatize~~ing~~ COVID-19 at every level, ranging from ~~the~~ personal to ~~the~~ policy. The main limitation of this study is its cross-sectional design, which cannot explain causality. ~~Also~~Additionally, the study was conducted only in East Java ~~province~~Province; thus, the results of this study ~~highlighted could not determine the~~have limited generalizability because the~~of the~~ respondents are~~as~~ ~~the~~ representatives of the Indonesian population.

Conclusions

A considerable proportion of the COVID-19 survivors in this cross-sectional study experienced COVID-19-related stigmatization at a medium level. Stigma among COVID-19 survivors has a close relationship with their QoL and mental health. These findings highlight the need for specific research and targeted interventions to address these issues for ~~those who survive~~ COVID-19 survivors. Given that Indonesia has suffered a high number of confirmed COVID-19 ~~confirmed~~ cases and deaths, the stigma experienced by COVID-19 survivors should be more broadly studied. COVID-19 survivors are a vulnerable group, and it is essential to identify new strategies ~~for~~ to promote the well-being of this group as soon as possible. Our findings can inform policy~~-~~makers~~policymakers~~ to ensure the availability of a safe environment~~,~~ supported by respectful care. Urgent action is required to ~~develop the provision of~~ destigmatize~~ing~~ COVID-19 at every level, ranging from ~~the~~ personal to policy.

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References

1. Sotgiu G, Dobler CC. Social stigma in the time of coronavirus disease 2019. Eur Respir J. 2020 Aug;56(2):2002461.
2. Donthu N, Gustafsson A. Effects of COVID-19 on business and research. J Bus Res. 2020/06/09. 2020 Sep;117:284–9.
3. World Health Organization. Coronavirus disease (COVID-19) [Internet]. [cited 2021 Feb 23]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019?gclid=Cj0KCQjwhIP6BRCMARIsALu9Lfnbx3ahXR8sSvIS65OyGIzjUfvucEyuf6mqVIHlN4tY9itTDGwlOxIaAgkgEALw_wcB
4. Malecki KMC, Keating JA, Safdar N. Crisis Communication and Public Perception of COVID-19 Risk in the Era of Social Media. Clin Infect Dis. 2020 Jun;
5. World Health Organization. Social stigma associated with Covid-19. WHO. Geneva, Switzerland: WHO; 2021.
6. Bagcchi S. Stigma during the COVID-19 pandemic. Lancet Infect Dis. 2020 Jul;20(7):782.
7. World Health Organization. Indonesia WHO Coronavirus disease. Geneva, Switzerland: WHO; 2021.
8. World Health Organization. Weekly epidemiological update [Internet]. 2021 [cited 2021 Feb 23]. Available from: https://www.who.int/publications/m/item/weekly-epidemiological-update---16-february-2021
9. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report

43 [Internet]. 2021 [cited 2021 Feb 23]. Available from: https://cdn.who.int/media/docs/default-source/searo/indonesia/covid19/external-situation-report-43_17-february.pdf?sfvrsn=1889cdf9_5

10. Djalante R, Lassa J, Setiamarga D, Sudjatma A, Indrawan M, Haryanto B, et al. Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. Prog Disaster Sci. 2020 Apr;6:100091.

11. KawalCovid19. Informasi terkini Covid-19 di Indonesia. KawalCovid19. 2021.

12. Mahmud A, Islam MR. Social Stigma as a Barrier to Covid-19 Responses to Community Well-Being in Bangladesh. Int J Community Well-Being. 2020 Aug;

13. Bailey TC, Merritt MW, Tediosi F. Investing in justice: ethics, evidence, and the eradication investment cases for lymphatic filariasis and onchocerciasis. Am J Public Health. 2015 Apr;105(4):629–36.

14. Chwaszcz J, Palacz-Chrisidis A, Wiechetek M, Bartczuk R, Niewiadomska I, Wośko P, et al. Quality of life and its factors in the COVID19 pandemic situation. Results of Stage 1 studies during the pandemic growth period. 2020;

15. Pierce M, Hope H, Ford T, Hatch S, Hotopf M, John A, et al. Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. The Lancet Psychiatry. 2020;7(10):883–92.

16. Bargon C, Batenburg M, van Stam L, van der Molen DM, van Dam I, van der Leij F, et al. The impact of the COVID-19 pandemic on quality of life, physical and psychosocial wellbeing in breast cancer patients – a prospective, multicenter cohort study. Eur J Cancer. 2020;138:S17–S17.

17. Batawi S, Alraddadi B, Tarazn N, Al-Raddadi R, Sindi A, Uyeki T. Quality of Life Among Survivors of Middle East Respiratory Syndrome Corona Virus. Open Forum Infect Dis. 2016 Dec;3(suppl_1).

18. Testa MA, Simonson DC. Assessment of Quality-of-Life Outcomes. N Engl J Med. 1996 Mar;334(13):835–40.

19. Price JH, Daek JA, Murnan J, Dimmig J, Akpanudo S. Power analysis in survey research: Importance and use for health educators. Am J Heal Educ. 2005;36(4):202–9.

20. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. PLoS Med. 2007 Oct;4(10):e296–e296.

21. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale¶. Res Nurs Health. 2001;24(6):518–29.

22. World Health Organization. WHOQOL-BREF versi Indonesia. World Heal Organ Qual Life (WHOQOL-BREF). 2004;1–5.

23. Anwar SA, Arsyad DS, Dwinata I, Ansar J, Rachmat M. Quality life of PROLANIS participants using WHOQOL BREF Indonesian version: A community in primary health care. Enfermería Clínica. 2020 Mar;30:213–7.

24. World Health Organization. Introduction, Administration, Scoring, and Generic Version of The Assessment. 1996;(December).

25. Silva PAB, Soares SM, Santos JFG, Silva LB. Cut-off point for WHOQOL-bref as a measure of quality of life of older adults. Rev Saude Publica. 2014 Jun;48(3):390–7.

26. Veit CT, Ware JE. The structure of psychological distress and well-being in general populations. J Consult Clin Psychol [Internet]. 1983 [cited 2021 Feb 23];51(5):730–42. Available from: https://pubmed.ncbi.nlm.nih.gov/6630688/

27. Al Mutair A, Alhajji M, Shamsan A. Emotional Wellbeing in Saudi Arabia During the COVID-19 Pandemic: A National Survey. Risk Manag Healthc Policy. 2021 Mar;Volume 14:1065–72.

28. Washer P. Representations of SARS in the British newspapers. Soc Sci Med. 2004;59(12):2561–71.

29. Murray DR, Jones DN, Schaller M. Perceived threat of infectious disease and its implications for sexual attitudes. Pers Individ Dif. 2013;54(1):103–8.

30. Dar SA, Khurshid SQ, Wani ZA, Khanam A, Haq I, Shah NN, et al. Stigma in coronavirus disease-19 survivors in Kashmir, India: A cross-sectional exploratory study. PLoS One. 2020 Nov;15(11):e0240152.

31. Eddleston M, Chowdhury FR, Mccready C. UK COVID-19 public inquiry needed to learn lessons and save lives. 2020;6736(20):177–80.

32. Horton R. Offline : Europe and COVID-19 — struggling with tragedy. Lancet [Internet]. 2021;396(10264):1713. Available from: http://dx.doi.org/10.1016/S0140-6736(20)32530-7

33. Lal A, Erondu NA, Heymann DL, Gitahi G, Yates R. Health Policy Fragmented health systems in COVID-19 : rectifying the misalignment between global health security and universal health coverage. Lancet [Internet]. 2021;397(10268):61–7. Available from: http://dx.doi.org/10.1016/S0140-6736(20)32228-5

34. Abdelhafiz AS, Alorabi M. Social Stigma: The Hidden Threat of COVID-19. Front Public Heal. 2020 Aug;8.

35. National Center for Chronic Disease Prevention. Reducing Stigma. CDC. 2021.

36. WHO SEARO. Stigma Sosial terkait dengan COVID-19. WHO. 2020.

37. Ramaci T, Barattucci M, Ledda C. Social Stigma during COVID-19 and its Impact on HCWs Outcomes. 2020;1–13.

38. Mostafa A, Sabry W, Id NSM. COVID-19-related stigmatization among a sample of Egyptian healthcare workers. 2020;1–15. Available from: http://dx.doi.org/10.1371/journal.pone.0244172

39. Zarei N, Joulaei H. The Impact of perceived stigma, quality of life, and spiritual beliefs on suicidal ideations among HIV-positive patients. AIDS Res Treat. 2018;2018.

40. Yi S, Chhoun P, Suong S, Thin K, Brody C, Tuot S. AIDS-related stigma and mental disorders among people living with HIV: a cross-sectional study in Cambodia. PLoS One [Internet]. 2015 Mar 25;10(3):e0121461–e0121461. Available from: https://pubmed.ncbi.nlm.nih.gov/25806534

41. Lohiniva A-L, Dub T, Hagberg L, Nohynek H. Learning about COVID-19-related stigma, quarantine and isolation experiences in Finland. Yourkavitch J, editor. PLoS One. 2021 Apr;16(4):e0247962.

42. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, 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. 2020;17(5).

43. Chatmon BN. Males and Mental Health Stigma. Am J Mens Health. 2020 Jul;14(4):155798832094932.

44. Affleck W, Carmichael V, Whitley R. Men's Mental Health: Social Determinants and Implications for Services. Can J Psychiatry. 2018 Sep;63(9):581–9.

45. Al Dhaheri AS, Bataineh MF, Mohamad MN, Ajab A, Al Marzouqi A, Jarrar AH, et al. Impact of COVID-19 on mental health and quality of life: Is there any effect? A cross-sectional study of the MENA region. Mahapatra B, editor. PLoS One. 2021 Mar;16(3):e0249107.

46. International Labour Organization. The impact of the COVID-19 pandemic on jobs and incomes in G20 economies. Saudi Arabia: International Labour Organization; 2020.

47. Hosey MM, Needham DM. Survivorship after COVID-19 ICU stay [Internet]. Vol. 6, Nature Reviews Disease Primers. Nature Research; 2020 [cited 2021 Feb 23]. p. 1–2. Available from: www.nature.com/nrdp

48. Wu C, Hu X, Song J, Yang D, Xu J, Cheng K, et al. Mental health status and related influencing factors of COVID-19 survivors in Wuhan, China. Clin Transl Med [Internet]. 2020 Jun 5 [cited 2021 Feb 23];10(2):e52. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/ctm2.52

49. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical

characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet. 2020;395(10223):507–13.

50. Taylor H, Collinson S, Saavedra-Campos M, Douglas R, Humphreys C, Roberts DJ, et al. Lessons learnt from an outbreak of COVID-19 in a workplace providing an essential service, Thames Valley, England 2020: Implications for investigation and control. Public Heal Pract. 2021 Nov;2:100217.

51. Schnettler B, Orellana L, Miranda-Zapata E, Saracostti M, Poblete H, Lobos G, et al. Diet quality during the COVID-19 pandemic: Effects of workplace support for families and work-to-family enrichment in dual-earner parents with adolescent children. Appetite. 2021 Nov;105823.

The required amendments with the reviewer's comments:

Reviewer 1

Comments	**Response**
This manuscript has an important contribution that appears to be an area that is clearly lacking. The authors have highlighted that the correlation between stigma, QoL, and mental health. but some concern Another categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL. Does it mean is not considered?	We thank the reviewer for the thoughtful review of our manuscript. Based on previous studies, we clarified this point in the methods section that categories on both BRIEF-WHOQoL and MHI-38. We have cited the appropriate references for the concern. We have added the sentence in page 5, "We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)".
Another highlighted that none of the subscales was used, only the total scores. Why not consider the subscales for quality of life and mental health conditions?	Thank you for the encouraging feedback. As we explained earlier, we have added the sentence to discuss the quality of life, "We categorized the total questionnaire responses into lower (< mean) and higher (> mean) QoL by following the previous study (25)". We have now included more explanation about mental health conditions and added the sentence as follows: "Then, we categorized the total questionnaire answers into lower (< mean) and higher (> mean) mental health. We highlighted that none of the subscales was used, only the total scores and referred to previous studies

	(27, 28)". We clarified that we did not observe the subscales for both conditions following previous studies (page 6).
Another consider a p-value of < 0.10. to include variables in multiple logistic regression. any justification behind?	We appreciate the reviewer drawing our attention to this typographical error, corrected in our resubmission. We have revised the type on p-value, which should be p<0.05. We believe the current table would make more transparent for the results (page 6).
one of the recommended COVID-19 prevention is social distancing. how it may be seen with the stigma type?	Thank you for the feedback. We clarified that social distancing is the program provided by the Indonesian Government to prevent the spread of COVID-19 in the community, and it is not related to stigma directly.
sigma, QoL, and mental health conditions have reverse causality, should clearly describe how they potentially confound to each other.	Thank you for your feedback. The present results are cross-sectional and thus cannot explain the causes of either sigma, QoL, and mental health conditions, yet they do suggest that different pathways may exist for the development of each of these symptoms. We clarified that in our study by conducting multivariate analysis, there was a correlation between stigma, QoL, and Mental Health. The significance level of 0.05. Only p<0.05 were included in the multivariate logistic regression analysis to identify factors significantly associated with the study outcome after adjusting for other significant predictors. When stigma is high, it is also

	followed by a decrease in quality of life and mental health.
Grammar and sentence/paragraph structure could be revised throughout to improve the flow.	Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing for typos and grammatical errors. Colleagues have reviewed the content to meet the journal's standards and ensure the sentence/paragraph structure improve the flow.

Reviewer 2

The rationale isn't entirely clear for the need for this study	Thank you for the feedback. The rationale has been added, and a more focused to justify the article (page..). We added the sentence as follows in the introduction: While determination to reduce the number of new confirmed cases and new deaths continues in Indonesia, the incidence of stigma toward COVID-19 survivors has been reported in social media, becoming a serious concern [11]. People who have recovered from a SARS-CoV-2 infection may experience multiple types of stigma, such as anticipated stigma—fear of being tested for SARS-CoV-2—perceived stigma—feeling judged by others—and internalized stigma—experiencing shame and self-rejection [1]. Many COVID-19 survivors have even reported discrimination, stereotyping, and

	job loss due to people associating them with a deadly disease [6,12].
The paper needs an English language copy editing from the beginning to the end. Please focus on it and the all the findings had not been written rigorously.	Thank you very much for this feedback; we have sent the manuscript to an English professional editor entitled Elite Editing. Colleagues have reviewed the content to meet the journal's standards and ensure the study's rigour.
The manuscript has poor discussion and seems like shallow.	Thank you for your concern. The discussion has been rewritten and reviewed based on the key results. We have added some sentences as follow: “The stigma that occurs in the community is due to the fear that survivors can still transmit COVID-19. This is due to a lack of accurate knowledge and information [35,36]”. “In addition, the program for disseminating the facts about COVID-19 needs to be a concern for the government. It can be done across sectors, community leaders, mass media, and artists or social influencers [37]. Thus, knowledge can increase, and people can be calmer in dealing with the COVID-19 pandemic”. “The stigmatization process occurs due to fear and being held responsible for contracting COVID-19 in the community. When this happens, individuals begin to

	gossip, get too interested in their COVID-19 experiences and become wary of interacting with survivors. This influences the dread of disclosing COVID-19's status and the unwillingness to meet new individuals, particularly those from high-risk groups [42]. Finally, adverse effects on social interactions are associated with reducing the individual's overall quality of life and mental health". In this study, we found that females were less likely to experience stigma related to mental health than males. Being female, in turn, is reported to be associated with significantly higher levels of stress, anxiety, and poor mental health status [43]. However, the male also faces problems that impact stress and mental disorders. This is due to work, income, family, and life transition factors. Not only that, the lack of counselling service facilities for men due to the issue of masculinity needs further attention [44,45]. During the COVID-19 pandemic, male survivors also experienced an impact on work, income, and self-actualization, making it easier for them to experience mental disorders [46,47]. The significant correlation between being male and mental health that caused worse outcomes in COVID-19 has been supported by other studies in China

	[50]. However, understanding and providing a psychological consultation room can help reduce the psychological burden experienced by male. We also discovered that labourers and entrepreneurs were less likely to experience stigma related to mental health. Testing positive for COVID-19 while working as labourers may cause insecurity due to lost work productivity. However, a good and conducive work environment can provide material, psychological and social support. Previous research has stated that a good work environment can support COVID-19 survivors to recover quickly and be enthusiastic during quarantine [51,52]. The support provided can be in the form of food, money, and daily necessities. WHO stated that stigma affected mental health among healthcare workers, patients, and survivors could be avoidable through adequate education through the media [53]. Understanding the primary drivers of misinformation is critical to preventing misjudgement in the community and increasing a sense of brotherhood to help each other.