



hamzah fkmunsri &lt;hamzah@fkm.unsri.ac.id&gt;

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**(SECOND ANNOUNCEMENT) CALL FOR PAPERS\_2021 SPECIAL ISSUE\_COVID-19**

1 message

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**Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>  
Bcc: hamzah.hasyim@gmail.com

17 May 2021 at 11:24

**CALL FOR PAPERS****KESMAS: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)****2021 Special Issue:****"Evaluating of the COVID-19 Pandemic Responses"****SECOND ANNOUNCEMENT**

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**KESMAS: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) is pleased to announce the 2021 Special Issue entitled "Evaluating of the COVID-19 Pandemic Responses".****The submission date is EXTENDED to 8 June 2021.**

A novel coronavirus, the cause of the outbreak of the coronavirus disease (COVID-19), was identified on 7 January 2020 by Chinese scientists. However, there is still an urgent need for a greater understanding of the epidemiology, evolution, transmission mechanism and modeling, pathogenesis, vaccines and antivirals, and related laboratory biosafety of this pandemic and responses after a year. Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) plans to publish the 2021 Special Issue entitled "Evaluating the COVID-19 Pandemic Responses" as a reaction to the current situation of the COVID-19 pandemic, with the hope that knowledge and work shared in the Special Issue can encourage the future directions of COVID-19 research.

**Article Types:**

Reviews, case reports, case study, opinions, commentary, policy briefs, and editorial. The submissions for high-quality articles with proper language use are welcome in this Special Issue.

For manuscript and submission instructions, please visit the Author Guidelines in KESMAS: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) website or you can simply click the link attached: <http://journal.fkm.ui.ac.id/kesmas/about/submissions#authorGuidelines>.

**The manuscript and the proof of native proofreading service can be submitted to: [jurnalkesmas.ui@gmail.com](mailto:jurnalkesmas.ui@gmail.com) with the subject: Call for Paper COVID-19 [2021]**

For further information, please feel free to contact the editorial office at:

E-mail: [jurnalkesmas.ui@gmail.com](mailto:jurnalkesmas.ui@gmail.com)

Whatsapp: +62 815-1141-6600

Thank you for your interest and support in this Special Issue. We look forward to receiving your submission.

Dr. Dewi Susanna, dra, MS.

Editor in Chief KESMAS: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)**

Website: <http://journal.fkm.ui.ac.id/kesmas> | SIR - 0,17 (2019)

**SECOND ANNOUNCEMENT**

# CALL FOR PAPERS

**2021 Special Issue:  
Evaluating the COVID-19 Pandemic Responses**

**Submission Date is EXTENDED until 8 June 2021.**

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) plans to publish the 2021 Special Issue entitled "Evaluating the COVID-19 Pandemic Responses" as a reaction to the current situation of the COVID-19 pandemic, with the hope that knowledge and work shared in the Special Issue can encourage the future directions of COVID-19 research.

Article Types	Submissions
Reviews, case reports, case study, opinions, commentary, policy briefs and editorial. The submissions for high-quality articles with proper language use are welcome in this Special Issue.	<ul style="list-style-type: none"> <li>Submit the article and the proof of native proofreading service to <a href="mailto:jurnal.kesmas@journal.fkm.ui.ac.id">jurnal.kesmas@journal.fkm.ui.ac.id</a> with <b>Subject: Call For Paper COVID-19 (2821)</b></li> <li>Author Guidelines can be accessed at <a href="http://journal.fkm.ui.ac.id/kesmas">http://journal.fkm.ui.ac.id/kesmas</a></li> <li>Article Processing Charge for accepted articles: USD 400-200.</li> </ul>

Each paper will be published online upon acceptance. The entire Special Issue will be published in July.

Contact: [jurnal.kesmas@journal.fkm.ui.ac.id](mailto:jurnal.kesmas@journal.fkm.ui.ac.id) | +62 815 1141 6600 | @kesmasjournal

**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)** published by Faculty of Public Health Universitas Indonesia since August 2006 and has been accredited by Director General of Higher Education in July 2009 and re-accredited in 2012 (No.56/DIKTI/Kep/2012) and 2017 (No.32a/E/KPT/2017). Our journal is indexed in Scopus & SINTA1 and published quarterly on February, May, August and November.

<http://journal.fkm.ui.ac.id/kesmas>

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 G301 Building G 3rd Floor  
 Kampus Baru UI Depok 16424  
 Phone: +62815 1141 6600



hmz73 &lt;hamzah\_hasyim@fkm.unsri.ac.id&gt;

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## special submission issue COVID-19

1 pesan

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**hamzah fkmunsri** <hamzah@fkm.unsri.ac.id>

6 Juni 2021 10.26

Kepada: "dr.rer.med. H Hamzah Hasyim" &lt;hamzah\_hasyim@fkm.unsri.ac.id&gt;

Dear Editor-in-chief  
Dewi Susanna,  
Department of Environmental Health Faculty of Public Health Universitas Indonesia, Indonesia

We want to submit a new manuscript entitled "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION" for special submission issue COVID-19 at the Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal). Therefore, ***I have attached the manuscript.***  
Sincerely

Thank you for your consideration of this manuscript.

Sincerely,  
Hamzah Hasyim (on behalf of all authors)  
Contact Number: +62 821-8477-3402  
Email: [hamzah@fkm.unsri.ac.id](mailto:hamzah@fkm.unsri.ac.id); [hamzah\\_hasyim@fkm.unsri.ac.id](mailto:hamzah_hasyim@fkm.unsri.ac.id)

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 **Manuscript Covid-19 and Healthy City (PD-HH).docx**  
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hmz73 &lt;hamzah\_hasyim@fkm.unsri.ac.id&gt;

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**Re: Special Issue: Evaluating of the COVID-19 Pandemic Responses**

1 pesan

---

**hamzah fkmunsri** <hamzah@fkm.unsri.ac.id>  
Kepada: Jurnal Kesmas <jurnalkesmas.ui@gmail.com>  
Bcc: hamzah\_hasyim@fkm.unsri.ac.id

1 Juli 2021 pukul 12.02

Dear

**Dewi Susanna**

Editor in Chief

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

Thank you for allowing us to submit a revised draft of our manuscript for publication in the Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

We appreciate the time and effort dedicated to providing feedback on our manuscript and valuable improvements to our paper. These modifications are highlighted in the manuscript.

Please see below both the manuscript in rev-a healthy city strategy to pandemic challenges and the author respons form.

Thank you for your consideration of this manuscript.

Best,

Hamzah

---

On Mon, 28 Jun 2021 at 14:40, Jurnal Kesmas <jurnalkesmas.ui@gmail.com> wrote:

Dear Hamzah,

Thank you for submitting you revision. Article has been reviewed. Please do some revisions as attached.

Please also fill the author respons form.

[HIGHLIGHT THE CHANGED PART - CHANGE THE FONT COLOR OR GIVE A HIGHLIGHT]

Revision can be sent to Editor by replying this email no later than 4 days.

Thank you.

Best Regards,

Dewi Susanna

Editor in Chief

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

---

On Sat, Jun 12, 2021 at 8:55 AM hamzah fkmunsri <hamzah@fkm.unsri.ac.id> wrote:

Dear

Editor in Chief

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

Maaf baru baca email, dikirimkan ulang script dengan pemberian warna font yang juga keterangan setiap perubahannya sudah ada di Author response to Editors' Comment. In addition, research centre Prof Pat has changed!

Respectfully,

Hamzah Hasyim

---

On Fri, 11 Jun 2021 at 13:40, Jurnal Kesmas <jurnalkesmas.ui@gmail.com> wrote:

Yth. Bapak Hamzah Hasyim,

Terima kasih telah mengirimkan hasil revisi. Namun, mohon memberikan tanda berupa ubah warna font atau berikan highlight pada bagian yang telah direvisi (tidak perlu menggunakan track changes). Silakan mengirimkan kembali dengan membalas email ini.

Terima kasih.

---

On Fri, Jun 11, 2021 at 1:36 PM hamzah fkmunsri <hamzah@fkm.unsri.ac.id> wrote:

Dear

Dewi Susanna

Editor in Chief

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

Thank you for allowing us to submit a revised draft of the manuscript "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION" publication in the Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

We appreciate the time and effort dedicated to providing feedback on our manuscript and grateful for the insightful comments on and valuable improvements to our paper. We have incorporated most of the suggestions made by you. Those changes are highlighted within the manuscript.

Please see below, both the manuscript in track changes and clean version, then in a column of Response to comment.

Thank you for your consideration of this manuscript.

Sincerely,

Hamzah Hasyim (on behalf of all authors)  
Contact Number: +62 821-8477-3402  
Email: hamzah@fkm.unsri.ac.id; hamzah\_hasyim@fkm.unsri.ac.id

On Tue, 8 Jun 2021 at 22:12, Jurnal Kesmas <jurnalkesmas.ui@gmail.com> wrote:

Dear Hamzah,

Thank you for submitting your revision. Before manuscript will be reviewed, please do some revision as attached.

[HIGHLIGHT THE CHANGED PART - CHANGE THE FONT COLOR OR GIVE A HIGHLIGHT]

Revision can be sent to Editor by replying this email no later than 3 days after receiving this email.

Thank you.

Best Regards,  
Dewi Susanna  
Editor in Chief  
Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

On Tue, Jun 8, 2021 at 5:12 PM hamzah fkmunsri <hamzah@fkm.unsri.ac.id> wrote:

Dear

Dewi Susanna

Editor in Chief

Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

Kindly see the revision of our paper. I attached the article.

Thank you for your consideration.

Respectfully,

Hamzah Hasyim,

Lecturer in Faculty of Public Health, Sriwijaya University,

South Sumatra, Palembang-Prabumulih, KM 32

Indralaya (Ogan Ilir) 30662

INDONESIA

<http://fkm.unsri.ac.id/>

[hamzah@fkm.unsri.ac.id](mailto:hamzah@fkm.unsri.ac.id)

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On Tue, 8 Jun 2021 at 13:51, Jurnal Kesmas <jurnalkesmas.ui@gmail.com> wrote:

Dear Hamzah,

Thank you for submitting to Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal). Before manuscript will be reviewed, please do some revision as attached.

Revision can be sent to Editor by replying this email no later than 2 days.

Thank you.

Best Regards,  
 Dewi Susanna  
 Editor in Chief  
 Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)

On Mon, Jun 7, 2021 at 6:49 PM hamzah fkmunsri <[hamzah@fkm.unsri.ac.id](mailto:hamzah@fkm.unsri.ac.id)> wrote:

Dear Editor-in-chief

**Dewi Susanna,**  
 Department of Environmental Health Faculty of Public Health Universitas Indonesia,  
 Indonesia

I want to submit a new manuscript for special Issue: Evaluating of the COVID-19 Pandemic Responses, which entitled "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION" for special submission issue COVID-19 at the Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

Therefore, I have attached the manuscript.

Thank you for your consideration of this manuscript.

Sincerely,  
 Hamzah Hasyim (on behalf of all authors)  
 Contact Number: +62 821-8477-3402

Lecturer in Faculty of Public Health, Sriwijaya University,  
 South Sumatra, Palembang-Prabumulih, KM 32  
 Indralaya (Ogan Ilir) 30662  
 INDONESIA  
<http://fkm.unsri.ac.id/>  
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 Phone number: +6282184773402

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Each paper will be published online upon acceptance. The entire Special Issue will be published in July.

**CONTACT:** [jurnalkesmas.u@gmail.com](mailto:jurnalkesmas.u@gmail.com) | +62 815-1140-6000 | [www.kesmasjournal.com](https://www.kesmasjournal.com)

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<http://journal.fkm.ui.ac.id/kesmas>



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Universitas Indonesia  
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**Author Response to Editors' Comment**

No.	Editors' / reviewers' comment	Response to comment	Lines
1	Write in VANCOUVER STYLE	Thank you for pointing this out.  We have revised it to use VANCOUVER STYLE. We write the number after the full stop in a superscript format.	40
2	Ensure that one paragraph consists of at least three sentences.	Thank you for pointing this out.  It has been done – now four sentences	42-47
3	In this method section has to be added information how to get the articles as mentioned method used is narrative literature review.  The method should be developed	Thank you for your suggestion on how to make the method section.  The method has been developed and expanded; the change can be found in the revised manuscript.	96-102
4	Too short. These results should be developed.	Thank you for your suggestion on how to make the results section.  The method has been expanded, and the change can be found in the revised manuscript.	105-147
5	<b>In Discussion</b> to deal with a pandemic	It has been done – now to deal with a pandemic	149
6	Write in VANCOUVER STYLE From there, it obtained results that Amsterdam was number one in 2018 in the Spotahome Healthiest Cities Index ( <a href="https://www.spotahome.com/healthiest-cities-world">https://www.spotahome.com/healthiest-cities-world</a> )	Thank you for pointing this out.  We have revised it to use VANCOUVER STYLE. We write the number after the full stop in a superscript format.	180
8	car-free	It has been done – now car-free	208
9	Top do this some cities	It has been done – now Some cities	343
10	Write in VANCOUVER STYLE	Thank you for pointing this out.	373-469

Commented [KJ1]: ?

Commented [KJ2]: Write in VANCOUVER STYLE

Commented [KJ3]: ?

Commented [KJ4]: ?



	<p>Use references based on online media (e-journal/e-book) and write the URL/link each reference. Use references in the last 10 years.</p>	<p>We have revised it to use VANCOUVER STYLE. We write the number after the full stop in a superscript format.</p> <p>As suggested by the editor, we have used references in the last ten years.</p>	
--	--	--	--

1 **COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO**  
2 **PANDEMIC CHALLENGES FROM PLANNING TO ACTION**

3 **Hamzah Hasyim<sup>1,\*</sup>, Patricia Dale<sup>2</sup>**

4 *<sup>1</sup> Faculty of Public Health, Universitas Sriwijaya, South Sumatra Province, Indonesia.*

5 *<sup>2</sup>Centre for Planetary Health and Food Security (CPHFS) School of Environment and Science,*  
6 *Griffith University, Nathan, Queensland, Australia.*

7  
8 *\*Corresponding author: Hamzah Hasyim; Faculty of Public Health, Universitas Sriwijaya, South*  
9 *Sumatra Province, Indonesia. E-mails: hamzah@fkm.unsri.ac.id ; Phone +62 (711) 580068 Fax*  
10 *+62 (711) 580089*

11  
12 **Abstract**

13 COVID-19 is a respiratory disease caused by SARS-CoV-2; a new coronavirus discovered in  
14 2019. WHO declared COVID-19 is a respiratory disease caused by SARS-CoV-2 as a pandemic  
15 that the detection level of cases changed daily, and it can track almost in real-time. This paper uses  
16 a narrative literature review to address issues of urban quality and lack of exercise. The specific  
17 aim was to discuss the concept of a healthy city, indicate a new urban model and advocate for the  
18 increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution and  
19 improving physical, psychological, and social fitness. A healthy city can improve residents' health  
20 by improving conditions of life to face COVID-19 pandemics. It needs a local capacity to prevent  
21 the spread of the diseases and design public health concepts concerning the environment built and  
22 towns contemporary in a new urban model. Dialogue opportunities in public health can provide  
23 essential guidance for designers (architects and town planners), decision-makers, public health  
24 experts, and health agencies locally, promoting the actions and policies to transform the City into  
25 a healthier neighbourhood and salutogenesis.

26 **Keywords:** City by bike, COVID-19, healthy City, new urban model.

27 **Introduction**

28 COVID-19 is a respiratory disease caused by SARS-CoV-2 (Coronavirus 2019; previous 2019 -  
29 nCoV), a new coronavirus discovered in 2019. The virus is transmitted from person to person  
30 through respiratory secretions and contact, mainly through sneezing and coughing.<sup>1</sup> The novel  
31 coronavirus outbreak has spread to many other countries. On 30 January 2020, the Committee of  
32 Emergency WHO announced a global health emergency based on notifications of cases that  
33 continued to increase in China and other international locations. It was declared a pandemic by  
34 the WHO.<sup>2</sup> The detection level of issues changed every day and can be tracked almost in real-  
35 time on the website provided by Johns Hopkins University and others forums. WHO has recorded  
36 more than 96 million cases of pandemic COVID-19 occurring globally, with the possibility of  
37 doubling and more than two million deaths confirmed.<sup>3</sup> Globally, as of 4:52 pm CEST, 9 June  
38 2021, there have been 173,674,509 confirmed cases of COVID-19, including 3,744,408 deaths,  
39 reported to WHO. As of 7 June 2021, a total of 2,092,863,229 vaccine doses have been  
40 administered.<sup>4</sup>

41  
42 Pandemics in the 20<sup>th</sup> and 21<sup>st</sup> century are primarily transmitted through direct contact with body  
43 fluids (AIDS, Ebola) or breathing (pandemic influenza, SARS-CoV-2 Mers), in contrast to the  
44 past, when the oral-faecal (Cholera) or vectorial (Malaria, Plague) routes predominated and could  
45 be controlled by public health sanitation. It has led to dramatic action in many countries, e.g.,  
46 China, Singapore, Japan, Italy, Spain and many other countries. In those areas, lockdown, social  
47 distancing, hand sanitising and wearing face masks have been and, in some, still mandatory.<sup>5</sup>

48  
49 On the other hand, urban density, population and housing favour the spread of COVID-19 in living  
50 quarters and at meetings and on public transport. One of the studies aimed to understand the urban-  
51 centric nature of the infection found that Transit mediums, especially rail and aviation, were  
52 positively associated.<sup>6</sup> The risk of transmission COVID-19 is enhanced by the proximity of  
53 people, inequality of economic and social conditions, which in turn, are associated with housing  
54 the poor and uncertain conditions of life.<sup>7,8</sup> Currently, according to the United Nations, cities  
55 house 55 per cent of the world's population, which is expected to rise to 68 per cent by 2050.<sup>9</sup> To  
56 take effective measures in addressing urban health, the various sectors need to be integrated (i.e.,  
57 a holistic intersectoral approach). Stakeholders include the health and other government

58 departments, non-government organisations, the private sector, and the public. A Healthy City  
59 project aims to bring together public, private, and voluntary partnerships to focus on urban health  
60 problems in a participatory manner broadly and improve residents' health by improving conditions  
61 of life. Thus, developing a cross-sectoral approach integrated with community participation is an  
62 essential feature of healthy cities.

63  
64 In addition, environmental planning and design for public health are essential. Data from several  
65 sources have identified that airborne viruses are carried on fine particles spreading into the  
66 environment. Deforestation, global warming, and atmospheric pollution can accelerate the spread  
67 of viruses such as SARS-CoV-2.<sup>10</sup> Another study investigated the relationship between air  
68 pollutants and COVID-19 spread in Jakarta, Indonesia, during the impact of large-scale social  
69 restriction (LSSR). During the LSSR period, the air pollution index (API) of PM2.5, PM10, CO,  
70 SO<sub>2</sub>, and NO<sub>2</sub> decreased by 9.48 per cent, 15.74 per cent, 29.17 per cent, 6.26 per cent, and 18.34  
71 per cent, respectively. In contrast, O<sub>3</sub> increased by 4.06 per cent. Another study discovered  
72 significant positive correlations between SO<sub>2</sub>, CO, and PM2.5 and COVID-19 cases. The area has  
73 become vulnerable to COVID-19 infection due to SO<sub>2</sub>, CO, and PM2.5 exposure.<sup>11</sup>

74  
75 The health of city populations depends on the condition of life and style of living. Factors in our  
76 day-to-day life, which significantly affect health status, are referred to as "determinants of health".  
77 These include the availability of water, sanitation, nutrition, food safety, health care, housing and  
78 working conditions, education, lifestyle, demography, and changes in income. In addition,  
79 environmental, physical, social, and economic factors are included. Improving the determinants  
80 of health is not easy in many situations.

81  
82 Encouraging increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing  
83 pollution and improving physical, psychological, and social fitness is a continuing concern within  
84 a healthy city's concept. For this reason, it needs comprehensive action to deal with the COVID-  
85 19 pandemic, not only in implementing the health protocol of COVID-19 but also applying the  
86 concept of a healthy city, which makes the most beneficial people and reducing from  
87 environmental pollution. For example, outdoor gym/outdoor exercise, walking, and cycling

88 contributes to reducing air pollution and improving the physical, psychological, and social fitness  
89 community.

90

91 Therefore, this article aimed to discuss the concept of a healthy city, suggest a new urban model  
92 and advocate for increased outdoor exercise, including bicycle use and walking and providing an  
93 activity that reduces air pollution. It also offers a strategic direction with some focus on Indonesia.

94

## 95 **Method**

96 This article conducted a narrative literature review using ScienceDirect search engines. The  
97 inclusion criteria were literature searched from 2020 to 2021 (the last two years) based on  
98 keywords relevant to the topics of interest. Keywords for the searches included. The kind of article  
99 was recorded, for example, if it was a review or a research article and if available with Open  
100 Access. Articles that were not available in Open Access were excluded. The articles selected were  
101 analysed qualitatively based on the information about healthy city strategy, new urban model, and  
102 City by bike and in the context of COVID-19.

103

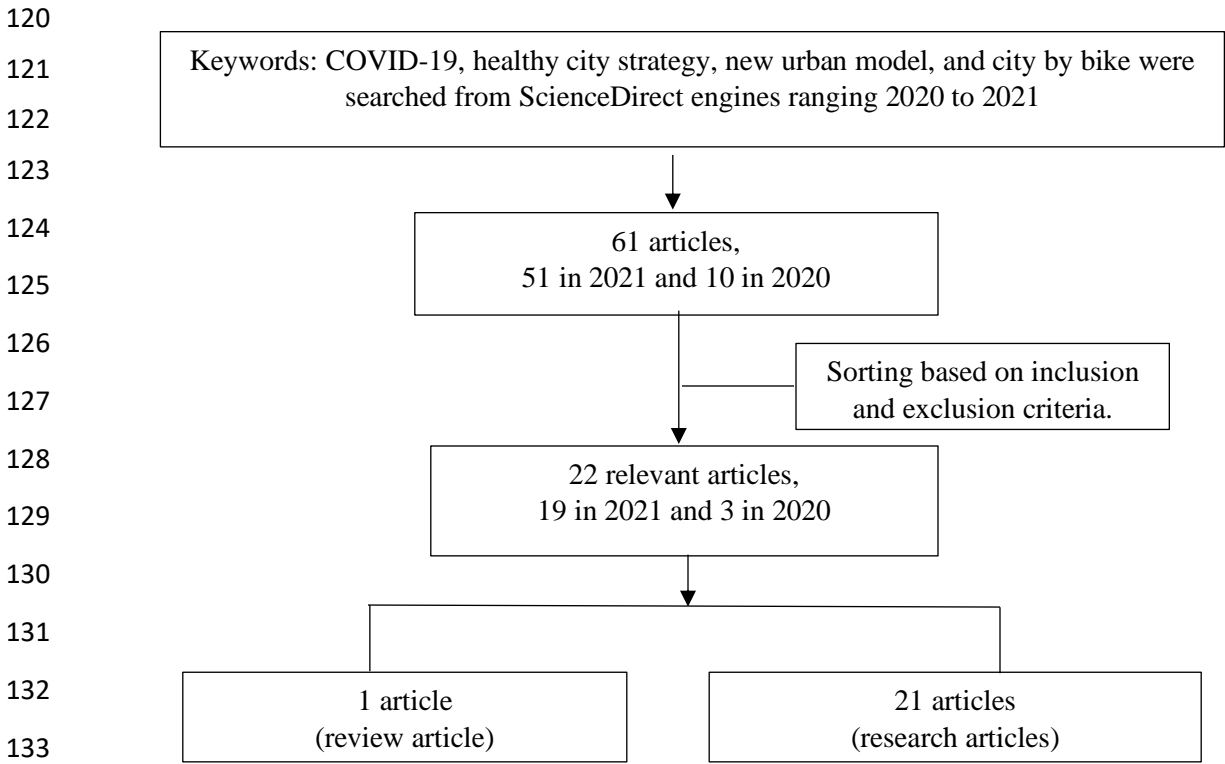
## 104 **Results**

105 The recent paper using a narrative literature review by ScienceDirect engines, founded 61 articles,  
106 51 in 2021 and 10 in 2020, with seven review articles and 54 research articles. Among 22 relevant  
107 works of literature were chosen, after sorting based on inclusion and exclusion criteria. Thus, the  
108 papers were selected and examined. Furthermore, there were 22 kinds of Open Access articles, 19  
109 in 2021 and 3 in 2020. These included one review article and 21 research articles, and six journals  
110 had transport in the titles (with 11 articles). Others included Health, Environment and  
111 Sustainability. In terms of broad discipline areas and order of frequency, there was the following  
112 number of articles: Social Sciences (14 articles), Engineering (6 articles), Environmental Science  
113 (5), Decision Sciences (4 articles), Medicine and Dentistry (3 articles), Economics, Econometrics  
114 and Finance (1 article), and energy (1 article).

115

116 Finally, the articles were reviewed and discussed using a comprehensive, critical, and objective  
117 analysis of the current knowledge to lead to a healthy city strategy to minimise COVID-19 and

118 improve the community's general health. The literature search strategy from ScienceDirect engines  
119 is shown in figure 1.



134 Figure 1. A Literature Search from ScienceDirect Engines

135

136 Critical articles reported in the scoping review helped identify seven lessons learned for cities  
137 from the COVID-19 pandemic in the post-pandemic era. Moglia et al. 2021 outlined three urban  
138 missions to guide a green urban recovery. These are to speed up the changes to urban mobility,  
139 achieve sustainable urban development, and build resilient urban infrastructure. They defined six  
140 transition pathways for urban mobility, energy, food, housing, health, and nature. These pathways  
141 can provide a roadmap for green recovery in cities while also increasing resilience.<sup>12</sup> Given that  
142 recent evidence predicts that urban cycling will continue to grow in Latin American cities, it is  
143 critical to implement policies and educational/training improvements to improve cyclist safety  
144 and health in these countries.<sup>13</sup> To become sustainable, cities are experiencing transformative  
145 changes. Identifying and describing the increasing adoption of big data technologies can assist  
146 policymakers and planners in assessing the benefits and costs when implementing sustainable  
147 urban transformations.<sup>14</sup>

148 **Discussion**

149 Exploring a Healthy City strategy **to deal with a pandemic** is a challenge from planning to action.  
150 This section reviews the following areas: a healthy city, a new urban model, and bikes in cities  
151 (increased exercise and pollution reduction).

152  
153 **Healthy City**

154 World Health Organization (WHO) published a manifesto for healthy and green recovery from  
155 COVID-19, including building healthy and decent habitation. Creating a healthy city is important  
156 during Pandemic COVID-19, which requires support and investment. Healthy cities are defined  
157 as cities that constantly develop and improve the physical and social environment and expand the  
158 source power communities that enable people to support each other to mutually carry out all life  
159 functions. Healthy Cities is a global attempt to prioritise the agenda for a social, economic, and  
160 political government town. For the past 30 years, the WHO European Healthy Cities Network has  
161 brought approximately 100 major cities and about 30 national networks.

162  
163 Population growth in urban areas is a global phenomenon, and countries in the Pacific West area  
164 are no exception. It is great to make cities carbon neutral, more habitat able, and healthier by  
165 transport and city planning. Recently, the WHO for the Region Pacific West has been working  
166 together with its members, developing several Healthy city initiatives to improve the health of  
167 urban areas. However, it is not easy to measure the results: an index is required, standards set, and  
168 the impact of each component of health needs to be determined. It further supports the idea that  
169 rating the effect of fitness is required to develop public policy.

170  
171 Furthermore, the main features of the Healthy Cities project include a political commitment with  
172 high levels of; collaboration amongst the cross-sectoral community; community participation;  
173 integration of activities; development of urban health profiles and local action plans; monitoring  
174 and evaluation periodically. In addition, participatory research and analysis; sharing information;  
175 media engagement; the incorporation of views from all groups in the community; sustainability  
176 mechanisms; connection with society and the development of human beings; and national and  
177 international networks. The measurement involves ten metrics of healthy lifestyles, including the  
178 rate of obesity and pollution levels. Each metric was assigned a score, which was then added



179 together to yield 100. the Spotahome Healthiest Cities Index showed that Amsterdam was number  
180 one in 2018.<sup>15</sup>

181

182 Information about public health can provide valuable rules and guidance for designers (architects  
183 and town planners), decision-makers, expert public health, and health agencies locally, promoting  
184 holistic policies and actions to transform the City into more healthy neighbourhoods.<sup>16</sup> These  
185 factors may explain the relatively good correlation between a multidisciplinary approach to  
186 develop systemic operational skills capable of dealing with complexity and a paradigm for  
187 assessing the effects of the current pandemic. The contemporary challenge is how we can re-design  
188 public health concepts concerning the built environment and new cities? The following section  
189 considers this question, with examples from cities that have implemented a healthy city approach  
190 and standards of human behaviour to minimise COVID-19 transmission.

191

## 192 **New Urban Model**

193 The health-related problems that result from urbanisation include high population density and  
194 overcrowding, inadequate housing for the poor, without clean water, with poor sanitation and  
195 ventilation; these factors can double the risk of spreading infection and result in social and health  
196 inequalities.<sup>17</sup> Previous studies have demonstrated that urbanisation has taken place rapidly in the  
197 past two decades. Urbanisation is expected to continue in the years to come, particularly in  
198 developing countries. While urbanisation provides opportunities for employment, education, and  
199 socio-economic development, it also raises several issues of health detriment related to  
200 determinants of health (introduced above). Health is related to the adequacy of medical health  
201 services. However, it is also associated with the urban physical, social, and economic environment  
202 and society's lifestyle and behaviour. Planning can remediate some of the health problems caused  
203 by poor quality in the determinants. Therefore, the solution to the problem of urban health areas  
204 requires the effective involvement of the non-health sector (e.g., industry, transport, energy work,  
205 education, commerce, utilities, and services the City, planning the City, and other similar items).  
206 Besides, it included the organisation of non-governmental, sector private, and community.

207 In some cities, a new planning concept has been introduced to overcome planning problems, and  
208 it includes the condensed City, large blocks, 15-Minute City away, **car-free** or a combination of  
209 them. Condensed (or 'solid') cities are characterised by a high density of settlements and shorter

210 travel distances. They have lower emissions of CO<sub>2</sub> than extensive cities and are healthier because  
211 of the diverse land use, briefer travel trips, and the opportunity for healthier mobility options. For  
212 example, Barcelona (Spain) plans to make more than 500 superblocks to reduce vehicle motor  
213 traffic and provide more space for people, travelling is active, and green space.<sup>18</sup>  
214 This superblock will reduce air pollution, noise levels, and heat islands effects while increasing  
215 green space and physical activity. It is estimated that they can prevent nearly 700 premature deaths  
216 in the City each year. Similar principles were applied in the environment and crossed low. France  
217 introduced a model of the 15-Minute City so that places of work, school, entertainment, and  
218 activities of others can be reached within 15 minutes walking. The 15-Minute City concept is a  
219 quite radical approach and will require monitoring.<sup>19</sup> It also provides the possibility of reducing  
220 inequality as it is a model that involves the mixing of groups of the population that differs from a  
221 model zoning settlement related to the status of the social economy. It also will reduce travel  
222 distance and thus reduce both CO<sub>2</sub>, air pollution and noise level. Hamburg (Germany) plans to be  
223 free from cars by 2034 to overcome the climate crisis. A car-free city reduces personal motor  
224 vehicle use and can provide easy access to public transport and increase physical activity. Another  
225 successful example is Vauban in Freiburg, Germany, with a neighbourhood without cars and  
226 sustainable housing. To conclude this section, the healthy city strategy reduces air pollution and  
227 noise levels, increases physical activity, and creates space for green areas—the new urban models  
228 of urban reverse the planning pyramid for transport.

229  
230 As well as planning, other measures are needed to minimise disease transmission in particular  
231 circumstances. For COVID-19, most countries imposed national lockdowns and social distancing  
232 policies to control its rapid dispersion. Several studies investigating the lockdown effectively  
233 managed and prevented the spread of the pandemic. Nevertheless, the study's findings remind us  
234 that we must continue to address air pollution issues to protect human health.<sup>20</sup>; as a result, the  
235 critical regions with widespread confirmed cases of COVID-19 should be urged to maintain  
236 lockdown. It is encouraging to compare pre COVID-19 air pollution with that found during the  
237 lockdown period. Industrial and mobility activities were reduced, and selected pollutants: NO<sub>2</sub>,  
238 PM<sub>2.5</sub>, and PM<sub>10</sub> emissions were reduced by approximately 20 - 40% in 2020.<sup>21</sup> It is essential to  
239 measure atmospheric chemistry, emission trends, and meteorology the lockdown effects on  
240 pollutant concentrations.<sup>22</sup> In addition, Hypoxia is observed in COVID-19 patients; however,

241 patients exhibit a distinct phenotype. Intracellular nitric oxide (NO) levels are essential in the  
242 vasodilation of small vessels.<sup>23</sup>

243  
244 From the previous discussion, it is recommended that, instead of prioritising the car, planners  
245 should generally prioritise transportation, walking on foot and cycling. Expanding bicycle use and  
246 increasing the cycling speed is one way to reduce the cross-vehicle motor and emissions of CO<sub>2</sub>  
247 and increase people's activity. Increased physical activity also improves public health. Mobility  
248 actively gives people the opportunity to physically build the movement in everyday life during  
249 daily trips because they often do not have enough time to go to the gym. Progress has been  
250 achieved in creating and expanding bike tracks, but this will only succeed if the lines are secure  
251 and are part of the network. Besides, in the concept New Urban Model, physical activity (PA) and  
252 the use of digital facilities by citizens increased during the COVID-19 pandemic; the first  
253 increased fitness and reduced close personal contacts.<sup>24,25</sup> The next section focuses on alternative  
254 transportation, especially the use of bikes.

255

### 256 **City by Bike**

257 It has been demonstrated that implementing the health protocol of COVID-19 and applying the  
258 concept of healthy city results in preventing or reducing COVID-19. For example, outdoor  
259 gym/outdoor exercise, walking, and cycling contribute to reducing air pollution and improving  
260 the community's physical, psychological, and social fitness. Here the focus is on bicycles (bikes).  
261 Cycling, in general, can help usher in a post-coronavirus society.<sup>26</sup>

262 The Netherlands is known as a cyclist-friendly city. Citizens more often choose to travel by  
263 bicycle, the foot or using public transport. Cycling is a cost-effective solution. These results are  
264 consistent with those of other studies and suggest that bike-sharing advantages help respond to  
265 the COVID19 pandemic and reduce air pollution.<sup>16,27</sup>

266

267 The effects of COVID-19 on the transportation sector are being studied extensively. Transport  
268 policies (e.g., for the use of bikes) can lead to reducing social contact to limit infection rates **unless**  
269 by using online platforms to deliver materials and food).<sup>28,29</sup> The COVID-19 pandemic has  
270 resulted in a dramatic shift in the demand for safe and physically segregated outdoor walking,  
271 cycling and commerce spaces. Cities worldwide have responded by enacting various policies and

272 programs aimed at addressing these changes.<sup>30</sup> In Switzerland, cycling is increasing, especially if  
273 there is an increase in traffic congestion, becoming a habit.<sup>31</sup> Bike-sharing can help respond to the  
274 COVID19 pandemic.<sup>27</sup> It has been found that the possibility of infection occurs in public  
275 transportation, so that, in a COVID-19 situation, bikes are a recommended alternative, if  
276 possible.<sup>27,32</sup> There is a significant potential for e-bikes as a substitute for public transportation in  
277 post-pandemic cases. These findings can develop appropriate first policy interventions in future  
278 urban transport strategies to promote and strengthen bicycle sharing.<sup>33,34</sup> The COVID-19  
279 pandemic is revealed from the pattern of urban mobility. Green Europe offers a 'road map' of a  
280 comprehensive strategy that aims to create a European Union more frugal with power and  
281 sustainability and a great opportunity to make cities carbon neutral. As well, cities can be more  
282 habitable and healthier through better urban and transport planning.

283

284 More details about bikeways are provided in the following, with examples of implementation.  
285 One of the ways that can be taken is properly assigning tracks (bike lanes). The width of the track  
286 bike in Bangkok, Thailand, is about 1.4 meters. Hiking is given the colour green with a picture of  
287 people riding bicycles on it. Bike tracks are explicitly made in between asphalt and pavement.  
288 The dividing lines for bikes use a separator coloured yellow as high as 30 cm. In Singapore,  
289 through the Land and Transport Authority (LTA) body and several bodies, the Ministry of  
290 Transport organised the City. It equipped it with bike tracks targeting the 700 km track bike that  
291 covers the entire country. Bicycle lanes in Singapore were made by reducing and managing the  
292 pedestrian footpath. In the settlement area, particular pathways come with signs mainly for  
293 cyclists. Some lines mark the park connector network (PCN) or network that can move from park  
294 to park and other city gardens. Each lane is equipped with manual directions to facilitate cyclists  
295 getting to the desired location that. Singapore is widely equipped with areas for parking bicycles.  
296 The Netherlands is referred to as one of the cities most friendly to cyclists. Amsterdam was called  
297 a paradise for cyclists in the world. The development of bicycles took some time. Previously, after  
298 the second world war, the existence of bikes was eroded by cars. the Netherlands started to  
299 implement the Woonerf system or share the joint road for a variety of interests.<sup>35</sup>

300

301 The Woonerf system is designed to slow the driver as cars, bicycles, and pedestrians share the  
302 same space. There is no special separator that limits bicycle lanes to motorised vehicles - only a

303 white line, both of which are confined. Göttingen, Germany, is considered cyclist friendly. Some  
304 regulations prohibit the honking (Harassing) of cyclists by cars motorcycles. The bike path in the  
305 City is only about three meters wide. Typically, bike tracks were given a different colour from the  
306 pedestrian lanes. In Germany, bike trails bike is not restricted to the City but may have intercity  
307 links. Bikes are safe and comfortable, and cyclists' facilities, including places to park bikes, are  
308 also reasonably plentiful.

309

310 Bike paths in Moscow, Russia, are similar to those in Singapore. The bicycle paths in Moscow,  
311 nicknamed a thousand parks, almost connect the entire City. One of them is in Gorky Park, which  
312 (the bike path) can be connected to the metro or stations. Locating bike tracks on the pavement  
313 beside roadways eliminates the possibility of collision with vehicles such as cars or motorcycles.  
314 For additional safety, closed-circuit television (CCTV) constantly monitors every street corner if  
315 there is a violation. There are many bicycle rental locations in Denmark. In the town, bike tracks  
316 are located on the right of the asphalt road. There is a bit of pavement between bike lanes and the  
317 road- highway. During busy times in Copenhagen, 62% of the population travels by bicycle to  
318 work or study. At each intersection, the bike path is coloured blue. There are also traffic and other  
319 lights that are specifically for the bike. Electric bicycles are also allowed to use the bike tracks.  
320 Every building must have a bicycle park. The number of parked bicycles is not small as in  
321 Indonesia. There are dozens of bikes parked in buildings. Motor vehicle riders prioritise  
322 pedestrians, so this should minimise harm to walkers. Many bridges are reserved for the bike rider.

323

#### 324 **Strategic direction (Indonesia)**

325 All the concepts discussed above emphasise access to space green, which is essential for various  
326 reasons, including mental health, cognitive function, and hope for the future. Strategies are needed  
327 to create green spaces green such as gardens and introduce more vegetation in the streets. Where  
328 feasible, we need to dig up the asphalt and plant many trees, which will reduce the urban heat  
329 effect, contribute to the absorption of CO<sub>2</sub>, and is suitable for health.

330

331 The Jakarta Provincial Government is stepping up bike lanes to reduce traffic congestion and air  
332 pollution. A 200-kilometre build bicycle lane with a pattern of "35," i.e. every 5 metres of white-  
333 lined bicycle lanes, there will be a 3-meter-long green marking block. The comprehensive

334 proposal of around sixty-two billion (IDR) is to construct an advanced bicycle path. Previously,  
335 Jakarta was also awarded the *Sustainability Transportation Awards* (STA). Jakarta was the first  
336 City in Southeast Asia to get the award in the area of transportation.<sup>36</sup>

337

### 338 **Conclusion and Recommendation**

339 A healthy city strategy to manage the COVID-19 pandemic is a challenge and must cover planning  
340 and action. Healthy city concepts provide a multidisciplinary approach for involving people such  
341 as architects and city designers, decision-makers, public health experts, and local health  
342 authorities, promoting measures and procedures to transform the City into a healthier and more  
343 amenable neighbourhood's during Pandemic COVID-19. **Some cities** have introduced a New  
344 Urban Model that includes managing population density, green space, and transport. Planning for  
345 a car-free city that reduces air pollution will create a healthier environment. Promoting walking  
346 and outdoor exercise outdoor gym/outdoor exercise encourages safe physical activity and  
347 increases existing green space. Cycling is an inexpensive form of exercise and contributes to  
348 reducing pollution and improving physical, psychological, and social fitness/health to increase  
349 endurance necessary for the COVID-19 pandemic.

350

### 351 **Abbreviations**

352 COVID-19: Corona Virus Disease 2019 caused by SARS-CoV-2; SARS-CoV-2: Severe Acute  
353 Respiratory Syndrome Coronavirus-2 previously provisionally named 2019 novel coronavirus or  
354 2019-nCoV (Lai, Shih 2020); CCTV: closed-circuit television; EU: European Union countries;  
355 IDR: Indonesian Rupiah; LTA: Land and Transport Authority; Mer's: Middle East Respiratory  
356 Syndrome; PA: the physical activity; PM10: Particulate Matter of 10 Microns in diameter or  
357 smaller People-in-Monitoring; WHO: World Health Organization.

358

### 359 **Ethics Approval and Consent to Participate**

360 Not Applicable.

361

### 362 **Competing interests**

363 The authors declare no competing interests.

364 **Availability of Data and Materials**

365 The authors have full access to all the data in the study and take responsibility for the data  
366 integrity.

367

368 **Authors' Contribution**

369 HH conceived the study. HH and PD wrote the main manuscript text, and all authors contributed  
370 to interpreting the results. All authors read and approved the final manuscript.

371

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**AUTHOR CONFIRMATION**

1 message

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**Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>  
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23 July 2021 at 08:58

Dear Hamzah Hasyim,

Hereby we attach your manuscript, **COVID-19 and the City: A Healthy City Strategy to Pandemic Challenges from Planning to Action**, which has been checked by the Language Editor of Kesmas: National Public Health Journal. Please do re-check some notes that need your confirmation. Then please send your correction and revision by no later than Saturday, July 24, 2021, at 17.00 WIB.

Thank you.

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**Re: AUTHOR CONFIRMATION**

1 message

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25 July 2021 at 13:22

To  
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Subject: Submission of a final revision manuscript for evaluation and publication in your reputed journal

I am enclosing herewith a correction and revision manuscript entitled "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY FOR PANDEMIC CHALLENGES, FROM PLANNING TO ACTION."

I look forward to hearing from you.

With kind regards,

**Hamzah**

On Fri, 23 Jul 2021 at 08:58, Jurnal Kesmas <jurnalkesmas.ui@gmail.com> wrote:

Dear Hamzah Hasyim,

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**2 attachments**

 **2021 Special Issue\_A HEALTHY CITY STRATEGY (clean).docx**  
83K

 **2021 Special Issue\_A HEALTHY CITY STRATEGY (track changes).docx**  
91K



hmz73 &lt;hamzah\_hasyim@fkm.unsri.ac.id&gt;

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**Fwd: AUTHOR CONFIRMATION**

3 pesan

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**hamzah fkmunsri** <hamzah@fkm.unsri.ac.id>

27 Juli 2021 19.39

Kepada: "dr.rer.med. H Hamzah Hasyim" &lt;hamzah\_hasyim@fkm.unsri.ac.id&gt;

Dear

Prof. Dr Dewi Susanna, dra, MS.

Editor in Chief KESMAS: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal),

Faculty of Public Health  
Universitas Indonesia  
G301 Building G 3rd Floor  
Kampus Baru UI Depok 16424  
Phone: +62815 1141 6600

Thank you for your letter and the opportunity to publish our paper in Volume 16 Special Issue No 1 of Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal).

I have filled and signed the proof approval letter. Kindly see the letter attached.

Yours sincerely,

Hamzah Hasyim (on behalf of all authors)

----- Forwarded message -----

From: **Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>

Date: Fri, 23 Jul 2021 at 08:58

Subject: AUTHOR CONFIRMATION

To: hamzah fkmunsri &lt;hamzah@fkm.unsri.ac.id&gt;

Dear Hamzah Hasyim,

Hereby we attach your manuscript, **COVID-19 and the City: A Healthy City Strategy to Pandemic Challenges from Planning to Action**, which has been checked by the Language Editor of Kesmas: National Public Health Journal. Please do re-check some notes that need your confirmation. Then please send your correction and revision by no later than Saturday, July 24, 2021, at 17.00 WIB.

Thank you.

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**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)** published by Faculty of Public Health Universitas Indonesia since August 2006 and has been accredited by Director General of Higher Education in July 2009 and re-accredited in 2012 (No.56/DIKTI/Kep/2012) and 2017 (No.32a/E/KPT/2017). Our journal is indexed in Scopus & SINTA1 and published quarterly on February, May, August and November.

<http://journal.fkm.ui.ac.id/kesmas>

**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)**  
Faculty of Public Health  
Universitas Indonesia  
G301 Building G 3rd Floor



Dr.rer.med.Hamzah Hasyim &lt;hamzah@fkm.unsri.ac.id&gt;

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**Fwd: Proof Approval Letter\_Special Issue 2021**

1 message

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**hamzah fkmunsri** <hamzah@fkm.unsri.ac.id>  
To: Patricia Dale <p.dale@griffith.edu.au>

27 July 2021 at 18:53

Dear Prof Pat,

I am delighted to inform you that our paper has been accepted, and I have filled and signed the proof approval letter.

However, before I sent this letter, I just clarifying that our title article has been changed.

The previously title

"COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION"

The current title

"COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY FOR PANDEMIC CHALLENGES, FROM PLANNING TO ACTION"

The last title has you proofread, and you revised the conjunction from "To" change into "For" in the title. Isn't it? Thank you for your information.

Fyi, the editor's message is still using the first title, but I have changed it in the proof approval letter.

Respectfully,

Hamzah Hasyim

----- Forwarded message -----

From: **Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>  
Date: Tue, 27 Jul 2021 at 11:26  
Subject: Proof Approval Letter\_Special Issue 2021  
To: hamzah fkmunsri <hamzah@fkm.unsri.ac.id>

Dear Hamzah Hasyim,

We would like to inform you that your manuscript entitled "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION" will be published in Volume 16 Special Issue No 1.

Please fill and sign the proof approval letter. The dummy article is still in process. We will send it as soon as possible. Please send back the proof approval letter by replying to this email within 24 hours.

Thank you.

Regards,  
Editor in chief  
Dewi Susanna

--  
**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)** published by Faculty of Public Health Universitas Indonesia since August 2006 and has been accredited by Director General of Higher Education in July 2009 and re-accredited in 2012 (No.56/DIKTI/Kep/2012) and 2017 (No.32a/E/KPT/2017). Our journal is indexed in Scopus & SINTA1 and published quarterly on February, May, August and November.

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**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)**  
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 **PROOF APPROVAL LETTER [special issue 2021].pdf**  
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## PROOF APPROVAL LETTER

The undersigned:

Name : Hamzah Hasyim  
Institution Name : Faculty of Public Health, Universitas Sriwijaya  
Institution Address : Unsri Indralaya Ogan Ilir 30662 South Sumatera Indonesia  
Institution Phone Number : (0711) 580068, Fax (0711) 580089  
Mobile Phone Number :082184773402  
E-mail : hamzah@fkm.unsri.ac.id  
Title of Article :COVID-19 AND THE CITY: A HEALTHY CITY  
STRATEGY FOR PANDEMIC CHALLENGES, FROM  
PLANNING TO ACTION.

Hereby have reviewed and approved the article to be published in **Volume 16 Special Issue No 1 of Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)**.

Thus, this statement is made truthfully.

Indralaya, 27 July 2021



(Hamzah Hasyim)



# COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY FOR PANDEMIC CHALLENGES, FROM PLANNING TO ACTION

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Hamzah Hasyim<sup>1\*</sup>, Patricia Dale<sup>2</sup>

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<sup>2</sup>*Centre for Planetary Health and Food Security (CPHFS) School of Environment and Science, Griffith University, Nathan, Queensland, Australia.*

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## Abstract

COVID-19 is a respiratory disease caused by SARS-CoV-2, a new coronavirus discovered in 2019. WHO declared COVID-19 is a respiratory disease caused by SARS-CoV-2 as a pandemic that the detection level of cases changed daily, and it can track almost in real-time. This paper used a narrative literature review to address issues of urban quality and lack of exercise. The specific aim was to discuss the concept of a healthy city, indicate a new urban model, and advocate for the increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological, and social fitness. A healthy city can improve residents' health by improving conditions of life to face COVID-19 pandemics. It needs the local capacity to prevent the spread of the diseases and design public health concepts concerning the built environment and contemporary towns in a new urban model. Dialogue opportunities in public health can provide essential guidance for designers (architects and town planners), decision-makers, public health experts, and health agencies locally, promoting the actions and policies to transform the city into a healthier neighborhood and salutogenesis.

**Keywords:** city by bike, COVID-19, healthy city, new urban model.

## Introduction

COVID-19 is a respiratory disease caused by SARS-CoV-2 (coronavirus 2019; previous 2019 - nCoV), a new coronavirus discovered in 2019. The virus is transmitted from person to person through respiratory secretions and contact, mainly through sneezing and coughing.<sup>1</sup> The novel coronavirus outbreak has spread to many other countries. On January 30, 2020, the Committee of Emergency World Health Organization (WHO) announced a global health emergency based on notifications of cases that continued to increase in China and other international locations. It was declared a pandemic by the WHO.<sup>2</sup> The detection level of issues changes every day and can be tracked almost in real-time on the website provided by Johns Hopkins University and others forums. WHO has recorded more than 96 million cases of pandemic COVID-19 occurring globally, with the possibility of doubling and more than two million deaths confirmed.<sup>3</sup> Globally, as of 4:52 pm CEST, June 9, 2021, there have been 173,674,509 confirmed cases of COVID-19, including 3,744,408 deaths, reported to WHO. As of June 7, 2021, a total of 2,092,863,229 vaccine doses have been administered.<sup>4</sup>

Pandemics in the 20<sup>th</sup> and 21<sup>st</sup> century are primarily transmitted through direct contact with body fluids (AIDS, Ebola) or breathing (pandemic influenza, SARS-CoV-2 Mers), in contrast to the past, when the oral-fecal (Cholera) or vectorial (Malaria, Plague) routes predominated and could be controlled by public health sanitation. It has led to dramatic action in many countries, e.g., China, Singapore, Japan, Italy, Spain, and many other countries. In those areas, lockdown, social distancing, hand sanitizing, and wearing masks have been and, in some, still are mandatory.<sup>5</sup>

On the other hand, urban density, population, and housing favor the spread of COVID-19 in living quarters and at meetings, and on public transport. One of the studies aimed to understand the urban-centric nature of the infection found that transit mediums, especially rail and aviation, were positively associated.<sup>6</sup> The risk of transmission COVID-19 is enhanced by the proximity of people, inequality of economic and social conditions, which in turn, are associated with housing the poor and uncertain conditions of life.<sup>7,8</sup> Currently, according to the United Nations, 55% of the world's population live in cities, and this is expected to rise to 68% by 2050.<sup>9</sup> To take effective measures in addressing urban health, the various sectors need to be integrated (i.e., a holistic intersectoral approach). Stakeholders include the health and other government departments, non-government organizations, the private sector, and the public. A Healthy City project aims to bring together public, private, and voluntary partnerships to focus on urban health problems in a participatory manner broadly and improve residents' health by improving conditions of life. Thus, developing a cross-sectoral approach integrated with community participation is an essential feature of healthy cities.

In addition, environmental planning and design for public health are essential. Data from several sources have identified that airborne viruses are carried on fine particles spreading into the environment. Deforestation, global warming, and atmospheric pollution can accelerate the spread of viruses such as SARS-CoV-2.<sup>10</sup> Another study investigated the relationship between air pollutants and COVID-19 spread in Jakarta, Indonesia, during the impact of large-scale social restriction (LSSR). During the LSSR period, the air pollution index (API) of PM2.5, PM10, CO, SO<sub>2</sub>, and NO<sub>2</sub> decreased by 9.48%, 15.74%, 29.17%, 6.26%, and 18.34%, respectively. In contrast, O<sub>3</sub> increased by 4.06%. Another study discovered significant positive correlations between SO<sub>2</sub>, CO, and PM2.5 and COVID-19 cases. The area has become vulnerable to COVID-19 infection due to SO<sub>2</sub>, CO, and PM2.5 exposure.<sup>11</sup>

The health of city populations depends on the condition of life and style of living. Factors in our day-to-day life, which significantly affect health status, are referred to as “determinants of

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health.” These include the availability of water, sanitation, nutrition, food safety, health care, housing and working conditions, education, lifestyle, demography, and changes in income. In addition, environmental, physical, social, and economic factors are included. Improving the determinants of health is not easy in many situations. Encouraging increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological, and social fitness is a continuing concern within a healthy city’s concept.

For this reason, it needs comprehensive action to deal with the COVID-19 pandemic, not only in implementing the health protocol of COVID-19 but also applying the concept of a healthy city, which reduces environmental pollution and also provides health benefits to people. For example, outdoor gym/outdoor exercise, walking, and cycling contribute to reducing air pollution and improving the community’s physical, psychological, and social fitness. Therefore, this article aimed to discuss the concept of a healthy city, suggest a new urban model, and advocate for increased outdoor exercise, including bicycle use and walking, and providing activity that reduces air pollution. This study also offers a strategic direction with some focus on Indonesia.

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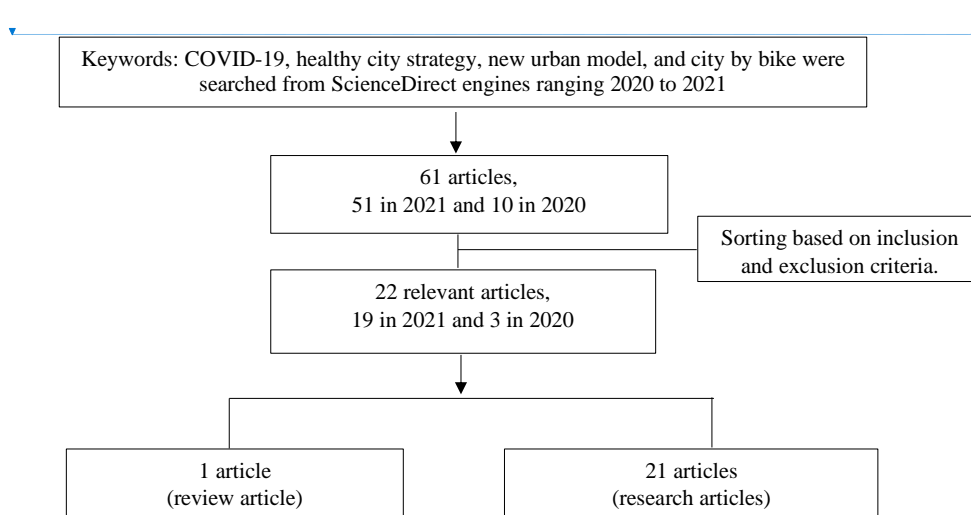
### Method

This article conducted a narrative literature review using ScienceDirect search engines. The inclusion criteria were literature searched from 2020 to 2021 (the last two years) based on keywords relevant to the topics of interest. The searches included the terms: “healthy city strategy,” “new urban model,” and “city by bike” in connection with COVID-19. The kind of article was recorded, for example, if it was a review or a research article and if available with Open Access. Articles that were not available in Open Access were excluded. The articles selected were analyzed qualitatively based on the information about healthy city strategy, new urban model, and city by bike and in the context of COVID-19.

### Results

The recent paper using a narrative literature review by ScienceDirect engines, found 61 articles, 51 in 2021 and 10 in 2020, with seven review articles and 54 research articles. There were 22 kinds of Open Access articles, 19 in 2021 and 3 in 2020 selected based on exclusion and inclusion criteria. These included one review article and 21 research articles in a range of areas including Social Sciences, Engineering, Environmental Science, Decision Sciences, Medicine and Dentistry, Economics, Econometrics and Finance, and Energy.

Finally, the articles were reviewed and discussed using a comprehensive, critical, and objective analysis of the current knowledge to lead to a healthy city strategy to minimize COVID-19 and improve the community’s general health. The literature search strategy from ScienceDirect engines is shown in Figure 1.



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**Figure 1. A Literature Search from ScienceDirect Engines**

Critical articles reported in the scoping review helped identify seven lessons learned for cities from the COVID-19 pandemic in the post-pandemic era. Moglia et al. outlined three urban missions to guide a green urban recovery. These are to speed up the changes to urban mobility, achieve sustainable urban development, and build resilient urban infrastructure. They defined six transition pathways for urban mobility, energy, food, housing, health, and nature. These pathways can provide a roadmap for green recovery in cities while also increasing resilience.<sup>12</sup> Given that recent evidence predicts that urban cycling will continue to grow in Latin American cities, it is critical to implement policies and educational/training improvements to improve cyclist safety and health in the cities.<sup>13</sup> To become sustainable, cities are experiencing transformative changes. Identifying and describing the increasing adoption of big data technologies can assist policymakers and planners in assessing the benefits and costs when implementing sustainable urban transformations.<sup>14</sup>

### Discussion

Exploring a Healthy City strategy to deal with a pandemic is a challenge from planning to action. This section discusses the following areas: a healthy city, a new urban model, and a city by bike (increased exercise and pollution reduction).

#### Healthy City

World Health Organization (WHO) published a manifesto for healthy and green recovery from COVID-19, including building healthy and decent habitation. Creating a healthy city is important during Pandemic COVID-19, which requires support and investment. Healthy cities are defined as cities that constantly develop and improve the physical and social environment and expand the power base of communities that enable people to support each other to carry out all life functions mutually. Healthy Cities is a global attempt to prioritize the agenda for a social,

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economic, and political government town. For the past 30 years, the WHO European Healthy Cities Network has included approximately 100 major cities and about 30 national networks.

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Population growth in urban areas is a global phenomenon, and countries in the Pacific West area are no exception. It is great to make cities carbon neutral, more habitable, and healthier by transport and city planning. Recently, the WHO for the Region Pacific West has been working together with its members, developing several Healthy City initiatives to improve the health of urban areas. However, it is not easy to measure the results: an index is required, standards set, and the impact of each component of health needs to be determined. It further supports the idea that rating the effect of fitness is required to develop public policy.

Furthermore, the main features of the Healthy Cities project include a political commitment with high levels of collaboration amongst the cross-sectoral community; community participation; integration of activities; development of urban health profiles and local action plans; monitoring and evaluation periodically. In addition, there needs to be participatory research and analysis, sharing information, media engagement, the incorporation of views from all groups in the community, sustainability mechanisms, connection with society and the development of human beings, and national and international networks. The measurement involves ten metrics of healthy lifestyles, including the rate of obesity and pollution levels. Each metric is assigned a score, which is then added to yield a score out of 100. The Spotahome Healthiest Cities Index showed that Amsterdam was number one in 2018.<sup>15</sup>

Information about public health can provide valuable rules and guidance for designers (architects and town planners), decision-makers, expert public health, and health agencies locally, promoting holistic policies and actions to transform the city into more healthy neighborhoods.<sup>16</sup> These factors may explain the relatively good correlation between a multidisciplinary approach to develop systemic operational skills capable of dealing with complexity and a paradigm for assessing the effects of the current pandemic. The contemporary challenge is how can we re-design public health concepts concerning the built environment and new cities? The following section considers this question, with examples from cities that have implemented a healthy city approach and standards of human behavior to minimize COVID-19 transmission.

#### *New Urban Model*

Urbanization can reduce human hardship and suffering, so urban health development must create sustainable urban communities, promoting healthy living, cross-sectoral approaches and political will, and comprehensive urban renewal programs.<sup>17</sup> Previous studies have demonstrated that urbanization has taken place rapidly in the past two decades.<sup>18</sup> Urbanization is expected to continue in the years to come, particularly in developing countries. While urbanization provides opportunities for employment, education, and socio-economic development, it also raises several issues of health detriment related to determinants of health (introduced above). Health is related to the adequacy of medical health services. However, it is also associated with the urban physical, social, and economic environment, and society's lifestyle and behavior. Planning can remediate some of the health problems caused by poor quality in the determinants. Therefore, the solution to the problem of urban health areas requires the effective involvement of the non-health sector (e.g., industry, transport, energy work, education, commerce, utilities, and services the City, planning the City, and other similar items). Besides, it included the organization of non-governmental, private sector, and community.

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In some cities, a new planning concept has been introduced to overcome planning problems, and it includes the condensed City, large blocks, 15-Minute City away, car-free, or a

combination of them. Condensed (or 'solid') cities are characterized by a high density of settlements and shorter travel distances. They have lower emissions of CO<sub>2</sub> than extensive cities and are healthier because of the diverse land use, briefer travel trips, and the opportunity for healthier mobility options. For example, Barcelona (Spain) plans to make more than 500 superblocks to reduce vehicle motor traffic and provide more space for people, traveling is active, and green space.<sup>19</sup> This superblock will reduce air pollution, noise levels, and heat islands effects while increasing green space and physical activity. It is estimated that they can prevent nearly 700 premature deaths in the city each year.

Similar principles were applied in other countries. France introduced a model of the 15-Minute City so that places of work, school, entertainment, and activities of others can be reached within 15 minutes walking. The 15-Minute City concept is a quite radical approach and will require monitoring.<sup>20</sup> It also provides the possibility of reducing inequality as it is a model that involves the mixing of groups of the population that differs from a model zoning settlement related to the status of the social economy. It also will reduce travel distance and thus reduce both CO<sub>2</sub>, air pollution, and noise level. Hamburg (Germany) plans to be free from cars by 2034 to overcome the climate crisis.<sup>21,22</sup> A car-free city reduces personal motor vehicle use and can provide easy access to public transport and increase physical activity. Another successful example is Vauban in Freiburg, Germany, with a neighborhood without cars and sustainable housing. To conclude this section, the healthy city strategy reduces air pollution and noise levels, increases physical activity, and creates space for green areas—the new urban models of urban reverse the planning pyramid for transport.

As well as planning, other measures are needed to minimize disease transmission in particular circumstances. For COVID-19, most countries imposed national lockdowns and social distancing policies to control its rapid dispersion. Several studies investigating the lockdown effectively managed and prevented the spread of the pandemic. Nevertheless, the study's findings are reminders to continue addressing air pollution issues to protect human health.<sup>23</sup> As a result, the critical regions with widespread confirmed cases of COVID-19 should be urged to maintain lockdown. It is encouraging to compare pre COVID-19 air pollution with that found during the lockdown period. Industrial and mobility activities were reduced, and selected pollutants: NO<sub>2</sub>, PM2.5, and PM10 emissions were reduced by approximately 20 - 40% in 2020.<sup>24</sup> It is essential to measure atmospheric chemistry, emission trends, and meteorology lockdown effects on pollutant concentrations.<sup>25</sup> In addition, Hypoxia is observed in COVID-19 patients; however, patients exhibit a distinct phenotype. Intracellular nitric oxide (NO) levels are essential in the vasodilation of small vessels.<sup>26</sup>

From the previous discussion, it is recommended that planners generally prioritize public transportation, walking on foot, and cycling instead of prioritizing the car. Expanding bicycle use and increasing the cycling speed is one way to reduce the cross-vehicle motor and emissions of CO<sub>2</sub> and increase people's activity. Increased physical activity also improves public health. Mobility actively gives people the opportunity to physically build a movement in everyday life during daily trips because they often do not have enough time to go to the gym. Progress has been achieved in creating and expanding bike tracks, but this will only succeed if the tracks are well marked, secure, and part of the network. Besides, in the concept New Urban Model, physical activity (PA) and the use of digital facilities by citizens increased during the COVID-19 pandemic; the first increased fitness and reduced close personal contacts.<sup>27,28</sup> The next section focuses on alternative transportation, especially the use of bikes.

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### City by Bike

It has been demonstrated that implementing the health protocol of COVID-19 and applying the concept of healthy city results in preventing or reducing COVID-19. Here the focus is on bicycles (bikes). Cycling, in general, can help usher in a post-coronavirus society.<sup>29</sup> The Netherlands is known as a cyclist-friendly city. Citizens more often choose to travel by bicycle, the foot or using public transport. Cycling is a cost-effective solution. These results were consistent with those of other studies and suggest that bike-sharing advantages help respond to the COVID19 pandemic and reduce air pollution.<sup>16,30</sup>

The effects of COVID-19 on the transportation sector are being studied extensively. Transport policies (e.g., for the use of bikes) can lead to reducing social contact to limit infection rates by using online platforms to deliver materials and food).<sup>31,32</sup> The COVID-19 pandemic has resulted in a dramatic shift in the demand for safe and physically segregated outdoor walking, cycling and commerce spaces. Cities worldwide have responded by enacting various policies and programs aimed at addressing these changes.<sup>33</sup> In Switzerland, cycling is increasing, especially if there is an increase in traffic congestion, and is becoming a habit.<sup>34</sup> Bike-sharing can help respond to the COVID19 pandemic.<sup>30</sup> It has been found that the possibility of infection occurs in public transportation, so that, in a COVID-19 situation, bikes are a recommended alternative, if possible.<sup>30,35</sup> There is a significant potential for e-bikes as a substitute for public transportation in post-pandemic cases. These findings can develop appropriate first policy interventions in future urban transport strategies to promote and strengthen bicycle sharing.<sup>36,37</sup> The COVID-19 pandemic is revealed from the pattern of urban mobility. Green Europe offers a 'road map' of a comprehensive strategy that aims to create a more frugal European Union with power and sustainability and a great opportunity to make cities carbon neutral.<sup>38</sup> As well, cities can be more habitable and healthier through better urban and transport planning.

More details about bikeways are provided in the following, with examples of implementation. One of the ways that can be taken is properly assigning tracks (bike lanes). The width of the bike track in Bangkok, Thailand, is about 1.4 meters. Hiking is given the color green with a picture of people riding bicycles on it. Bike tracks are explicitly made in between asphalt and pavement. The dividing lines for bikes use a separator colored yellow as high as 30 cm. In Singapore, through the Land and Transport Authority (LTA) body and several bodies, the Ministry of Transport organizes the City. It equipped it with bike tracks targeting the 700 km track bike that covers the entire country. Bicycle lanes in Singapore were made by reducing and managing the pedestrian footpath. In the settlement area, particular pathways come with signs mainly for cyclists. Some lines mark the park connector network (PCN) or network that can move from park to park and other city gardens. Each lane is equipped with manual directions to facilitate cyclists getting to the desired location. Singapore is widely equipped with areas for parking bicycles. The Netherlands is referred to as one of the cities most friendly to cyclists. Amsterdam was called a paradise for cyclists in the world. The development of bicycles took some time. Previously, after the second world war, the existence of bikes was eroded by cars. The Netherlands has started to implement the Woonerf system or share the joint road for a variety of users.<sup>39</sup>

The Woonerf system is designed to slow the driver as cars, bicycles, and pedestrians share the same space. There is no special separator that limits bicycle lanes to motorized vehicles, only a white line, both of which are confined. Göttingen, Germany, is considered cyclist-friendly. Some regulations prohibit the honking (harassing) of cyclists by cars and motorcycles. The bike path in the city is only about three meters wide. Typically, bike tracks were given a different color from the pedestrian lanes. In Germany, bike trails are not restricted to the City but may have intercity

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links. Bikes are safe and comfortable, and cyclists' facilities, including places to park bikes, are also reasonably plentiful.

Bike paths in Moscow, Russia, are similar to those in Singapore. The bicycle paths in Moscow, nicknamed a thousand parks, almost connect the entire City. One of them is in Gorky Park, in which the bike path can be connected to the metro or stations. Locating bike tracks on the pavement beside roadways eliminates the possibility of collision with vehicles such as cars or motorcycles. For additional safety, closed-circuit television (CCTV) constantly monitors every street corner in case there is a violation. There are many bicycle rental locations in Denmark. In the town, bike tracks are located on the right of the asphalt road. There is a bit of pavement between bike lanes and the road-highway. During busy times in Copenhagen, 62% of the population travels by bicycle to work or study. At each intersection, the bike path is colored blue. There are also traffic and other lights that are specifically for the bike. Electric bicycles are also allowed to use the bike tracks. Every building must have a bicycle park. The number of parked bicycles is not small as in Indonesia. There are dozens of bikes parked in buildings. Motor vehicle riders prioritize pedestrians, so this should minimize harm to walkers. Many bridges are reserved for the bike rider.

#### *Strategic Direction (Indonesia)*

All the concepts discussed above emphasize access to green space, which is essential for various reasons, including mental health, cognitive function, and hope for the future. Strategies are needed to create green spaces such as gardens and to introduce more vegetation in the streets. Where feasible, it needs to dig up the asphalt and plant many trees, which will reduce the urban heat effect, contribute to the absorption of CO<sub>2</sub>, and is a health benefit. The Jakarta Provincial Government is stepping up bike lanes to reduce traffic congestion and air pollution. A 200-kilometer build bicycle lane with a pattern of "35," i.e., every 5 meters of white-lined bicycle lanes, there will be a 3-meter-long green marking block. The comprehensive proposal of around sixty-two billion (IDR) is to construct an advanced bicycle path. Previously, Jakarta was also awarded the *Sustainability Transportation Awards* (STA). Jakarta was the first City in Southeast Asia to get the award in the area of transportation.<sup>40</sup>

#### **Conclusion and Recommendation**

A healthy city strategy to manage the COVID-19 pandemic is a challenge and must cover planning and action. Healthy city concepts provide a multidisciplinary approach for involving people such as architects and city designers, decision-makers, public health experts, and local health authorities, promoting measures and procedures to transform the city into a healthier place, with more amenable neighborhoods during the COVID-19 pandemic. Some cities have introduced a New Urban Model that includes managing population density, green space, and transport. Planning for a car-free city that reduces air pollution will create a healthier environment. Promoting walking and outdoor exercise outdoor gym/outdoor exercise encourages safe physical activity and increases existing green space. Cycling is an inexpensive form of exercise and contributes to reducing pollution and improving physical, psychological, and social fitness/health to increase endurance necessary for the COVID-19 pandemic.

#### **Abbreviations**

COVID-19: coronavirus disease 2019 caused by SARS-CoV-2; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2 previously provisionally named 2019 novel coronavirus or 2019-nCoV (Lai, Shih 2020); CCTV: closed-circuit television; EU: European Union countries;

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IDR: Indonesian Rupiah; LTA: Land and Transport Authority; Mer's: Middle East Respiratory Syndrome; PA: the physical activity; PM10: Particulate Matter of 10 Microns in diameter or smaller People-in-Monitoring; WHO: World Health Organization.

### Ethics Approval and Consent to Participate

Not Applicable.

### Competing Interests

The authors declare no competing interests.

### Availability of Data and Materials

The authors have full access to all the data in the study and take responsibility for the data integrity.

### Authors' Contribution

HH conceived the study. HH and PD wrote the main manuscript text, and all authors contributed to interpreting the results. All authors read and approved the final manuscript.

### References

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# COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY FOR PANDEMIC CHALLENGES, FROM PLANNING TO ACTION

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## **Abstract**

COVID-19 is a respiratory disease caused by SARS-CoV-2, a new coronavirus discovered in 2019. WHO declared COVID-19 is a respiratory disease caused by SARS-CoV-2 as a pandemic that the detection level of cases changed daily, and it can track almost in real-time. This paper used a narrative literature review to address issues of urban quality and lack of exercise. The specific aim was to discuss the concept of a healthy city, indicate a new urban model, and advocate for the increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological, and social fitness. A healthy city can improve residents' health by improving conditions of life to face COVID-19 pandemics. It needs the local capacity to prevent the spread of the diseases and design public health concepts concerning the built environment and contemporary towns in a new urban model. Dialogue opportunities in public health can provide essential guidance for designers (architects and town planners), decision-makers, public health experts, and health agencies locally, promoting the actions and policies to transform the city into a healthier neighborhood and salutogenesis.

**Keywords:** city by bike, COVID-19, healthy city, new urban model.

## Introduction

COVID-19 is a respiratory disease caused by SARS-CoV-2 (coronavirus 2019; previous 2019 - nCoV), a new coronavirus discovered in 2019. The virus is transmitted from person to person through respiratory secretions and contact, mainly through sneezing and coughing.<sup>1</sup> The novel coronavirus outbreak has spread to many other countries. On January 30, 2020, the Committee of Emergency World Health Organization (WHO) announced a global health emergency based on notifications of cases that continued to increase in China and other international locations. It was declared a pandemic by the WHO.<sup>2</sup> The detection level of issues changes every day and can be tracked almost in real-time on the website provided by Johns Hopkins University and others forums. WHO has recorded more than 96 million cases of pandemic COVID-19 occurring globally, with the possibility of doubling and more than two million deaths confirmed.<sup>3</sup> Globally, as of 4:52 pm CEST, June 9, 2021, there have been 173,674,509 confirmed cases of COVID-19, including 3,744,408 deaths, reported to WHO. As of June 7, 2021, a total of 2,092,863,229 vaccine doses have been administered.<sup>4</sup>

Pandemics in the 20<sup>th</sup> and 21<sup>st</sup> century are primarily transmitted through direct contact with body fluids (AIDS, Ebola) or breathing (pandemic influenza, SARS-CoV-2 Mers), in contrast to the past, when the oral-fecal (Cholera) or vectorial (Malaria, Plague) routes predominated and could be controlled by public health sanitation. It has led to dramatic action in many countries, e.g., China, Singapore, Japan, Italy, Spain, and many other countries. In those areas, lockdown, social distancing, hand sanitizing, and wearing masks have been and, in some, still are mandatory.<sup>5</sup>

On the other hand, urban density, population, and housing favor the spread of COVID-19 in living quarters and at meetings, and on public transport. One of the studies aimed to understand the urban-centric nature of the infection found that transit mediums, especially rail and aviation, were positively associated.<sup>6</sup> The risk of transmission COVID-19 is enhanced by the proximity of people, inequality of economic and social conditions, which in turn, are associated with housing the poor and uncertain conditions of life.<sup>7,8</sup> Currently, according to the United Nations, 55% of the world's population live in cities, and this is expected to rise to 68% by 2050.<sup>9</sup> To take effective measures in addressing urban health, the various sectors need to be integrated (i.e., a holistic intersectoral approach). Stakeholders include the health and other government departments, non-government organizations, the private sector, and the public. A Healthy City project aims to bring together public, private, and voluntary partnerships to focus on urban health problems in a participatory manner broadly and improve residents' health by improving conditions of life. Thus, developing a cross-sectoral approach integrated with community participation is an essential feature of healthy cities.

In addition, environmental planning and design for public health are essential. Data from several sources have identified that airborne viruses are carried on fine particles spreading into the environment. Deforestation, global warming, and atmospheric pollution can accelerate the spread of viruses such as SARS-CoV-2.<sup>10</sup> Another study investigated the relationship between air pollutants and COVID-19 spread in Jakarta, Indonesia, during the impact of large-scale social restriction (LSSR). During the LSSR period, the air pollution index (API) of PM2.5, PM10, CO, SO<sub>2</sub>, and NO<sub>2</sub> decreased by 9.48%, 15.74%, 29.17%, 6.26%, and 18.34%, respectively. In contrast, O<sub>3</sub> increased by 4.06%. Another study discovered significant positive correlations between SO<sub>2</sub>, CO, and PM2.5 and COVID-19 cases. The area has become vulnerable to COVID-19 infection due to SO<sub>2</sub>, CO, and PM2.5 exposure.<sup>11</sup>

The health of city populations depends on the condition of life and style of living. Factors in our day-to-day life, which significantly affect health status, are referred to as “determinants of

health.” These include the availability of water, sanitation, nutrition, food safety, health care, housing and working conditions, education, lifestyle, demography, and changes in income. In addition, environmental, physical, social, and economic factors are included. Improving the determinants of health is not easy in many situations. Encouraging increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological, and social fitness is a continuing concern within a healthy city’s concept.

For this reason, it needs comprehensive action to deal with the COVID-19 pandemic, not only in implementing the health protocol of COVID-19 but also applying the concept of a healthy city, which reduces environmental pollution and also provides health benefits to people. For example, outdoor gym/outdoor exercise, walking, and cycling contribute to reducing air pollution and improving the community’s physical, psychological, and social fitness. Therefore, this article aimed to discuss the concept of a healthy city, suggest a new urban model, and advocate for increased outdoor exercise, including bicycle use and walking, and providing activity that reduces air pollution. This study also offers a strategic direction with some focus on Indonesia.

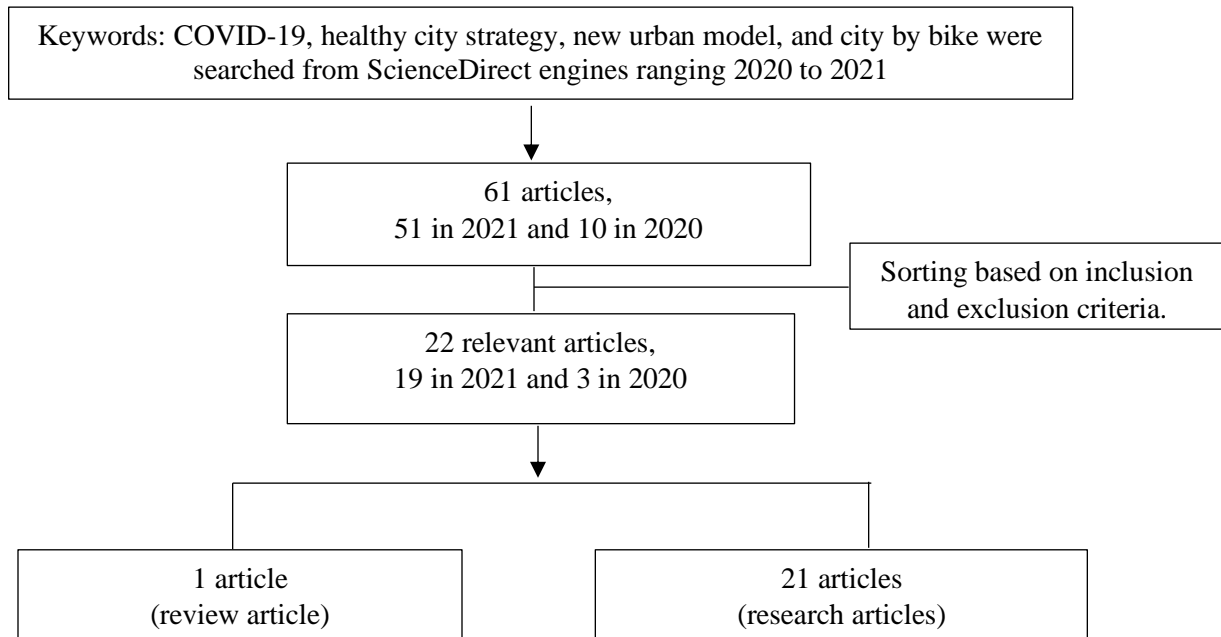
## **Method**

This article conducted a narrative literature review using ScienceDirect search engines. The inclusion criteria were literature searched from 2020 to 2021 (the last two years) based on keywords relevant to the topics of interest. The searches included the terms: “healthy city strategy,” “new urban model,” and “city by bike” in connection with COVID-19. The kind of article was recorded, for example, if it was a review or a research article and if available with Open Access. Articles that were not available in Open Access were excluded. The articles selected were analyzed qualitatively based on the information about healthy city strategy, new urban model, and city by bike and in the context of COVID-19.

## **Results**

The recent paper using a narrative literature review by ScienceDirect engines, found 61 articles, 51 in 2021 and 10 in 2020, with seven review articles and 54 research articles. There were 22 kinds of Open Access articles, 19 in 2021 and 3 in 2020 selected based on exclusion and inclusion criteria. These included one review article and 21 research articles in a range of areas including Social Sciences, Engineering, Environmental Science, Decision Sciences, Medicine and Dentistry, Economics, Econometrics and Finance, and Energy.

Finally, the articles were reviewed and discussed using a comprehensive, critical, and objective analysis of the current knowledge to lead to a healthy city strategy to minimize COVID-19 and improve the community’s general health. The literature search strategy from ScienceDirect engines is shown in Figure 1.



**Figure 1. A Literature Search from ScienceDirect Engines**

Critical articles reported in the scoping review helped identify seven lessons learned for cities from the COVID-19 pandemic in the post-pandemic era. Moglia et al. outlined three urban missions to guide a green urban recovery. These are to speed up the changes to urban mobility, achieve sustainable urban development, and build resilient urban infrastructure. They defined six transition pathways for urban mobility, energy, food, housing, health, and nature. These pathways can provide a roadmap for green recovery in cities while also increasing resilience.<sup>12</sup> Given that recent evidence predicts that urban cycling will continue to grow in Latin American cities, it is critical to implement policies and educational/training improvements to improve cyclist safety and health in the cities.<sup>13</sup> To become sustainable, cities are experiencing transformative changes. Identifying and describing the increasing adoption of big data technologies can assist policymakers and planners in assessing the benefits and costs when implementing sustainable urban transformations.<sup>14</sup>

## **Discussion**

Exploring a Healthy City strategy to deal with a pandemic is a challenge from planning to action. This section discusses the following areas: a healthy city, a new urban model, and a city by bike (increased exercise and pollution reduction).

### *Healthy City*

World Health Organization (WHO) published a manifesto for healthy and green recovery from COVID-19, including building healthy and decent habitation. Creating a healthy city is important during Pandemic COVID-19, which requires support and investment. Healthy cities are defined as cities that constantly develop and improve the physical and social environment and expand the power base of communities that enable people to support each other to carry out all life



functions mutually. Healthy Cities is a global attempt to prioritize the agenda for a social, economic, and political government town. For the past 30 years, the WHO European Healthy Cities Network has included approximately 100 major cities and about 30 national networks.

Population growth in urban areas is a global phenomenon, and countries in the Pacific West area are no exception. It is great to make cities carbon neutral, more habitable, and healthier by transport and city planning. Recently, the WHO for the Region Pacific West has been working together with its members, developing several Healthy City initiatives to improve the health of urban areas. However, it is not easy to measure the results: an index is required, standards set, and the impact of each component of health needs to be determined. It further supports the idea that rating the effect of fitness is required to develop public policy.

Furthermore, the main features of the Healthy Cities project include a political commitment with high levels of collaboration amongst the cross-sectoral community; community participation; integration of activities; development of urban health profiles and local action plans; monitoring and evaluation periodically. In addition, there needs to be participatory research and analysis, sharing information, media engagement, the incorporation of views from all groups in the community, sustainability mechanisms, connection with society and the development of human beings, and national and international networks. The measurement involves ten metrics of healthy lifestyles, including the rate of obesity and pollution levels. Each metric is assigned a score, which is then added to yield a score out of 100. The Spothome Healthiest Cities Index showed that Amsterdam was number one in 2018.<sup>15</sup>

Information about public health can provide valuable rules and guidance for designers (architects and town planners), decision-makers, expert public health, and health agencies locally, promoting holistic policies and actions to transform the city into more healthy neighborhoods.<sup>16</sup> These factors may explain the relatively good correlation between a multidisciplinary approach to develop systemic operational skills capable of dealing with complexity and a paradigm for assessing the effects of the current pandemic. The contemporary challenge is how can we re-design public health concepts concerning the built environment and new cities? The following section considers this question, with examples from cities that have implemented a healthy city approach and standards of human behavior to minimize COVID-19 transmission.

### *New Urban Model*

Urbanization can reduce human hardship and suffering, so urban health development must create sustainable urban communities, promoting healthy living, cross-sectoral approaches and political will, and comprehensive urban renewal programs.<sup>17</sup> Previous studies have demonstrated that urbanization has taken place rapidly in the past two decades.<sup>18</sup> Urbanization is expected to continue in the years to come, particularly in developing countries. While urbanization provides opportunities for employment, education, and socio-economic development, it also raises several issues of health detriment related to determinants of health (introduced above). Health is related to the adequacy of medical health services. However, it is also associated with the urban physical, social, and economic environment, and society's lifestyle and behavior. Planning can remediate some of the health problems caused by poor quality in the determinants. Therefore, the solution to the problem of urban health areas requires the effective involvement of the non-health sector (e.g., industry, transport, energy work, education, commerce, utilities, and services the City, planning the City, and other similar items). Besides, it included the organization of non-governmental, private sector, and community.

In some cities, a new planning concept has been introduced to overcome planning problems, and it includes the condensed City, large blocks, 15-Minute City away, car-free, or a combination of them. Condensed (or 'solid') cities are characterized by a high density of settlements and shorter travel distances. They have lower emissions of CO<sub>2</sub> than extensive cities and are healthier because of the diverse land use, briefer travel trips, and the opportunity for healthier mobility options. For example, Barcelona (Spain) plans to make more than 500 superblocks to reduce vehicle motor traffic and provide more space for people, traveling is active, and green space.<sup>19</sup> This superblock will reduce air pollution, noise levels, and heat islands effects while increasing green space and physical activity. It is estimated that they can prevent nearly 700 premature deaths in the city each year.

Similar principles were applied in other countries. France introduced a model of the 15-Minute City so that places of work, school, entertainment, and activities of others can be reached within 15 minutes walking. The 15-Minute City concept is a quite radical approach and will require monitoring.<sup>20</sup> It also provides the possibility of reducing inequality as it is a model that involves the mixing of groups of the population that differs from a model zoning settlement related to the status of the social economy. It also will reduce travel distance and thus reduce both CO<sub>2</sub>, air pollution, and noise level. Hamburg (Germany) plans to be free from cars by 2034 to overcome the climate crisis.<sup>21,22</sup> A car-free city reduces personal motor vehicle use and can provide easy access to public transport and increase physical activity. Another successful example is Vauban in Freiburg, Germany, with a neighborhood without cars and sustainable housing. To conclude this section, the healthy city strategy reduces air pollution and noise levels, increases physical activity, and creates space for green areas—the new urban models of urban reverse the planning pyramid for transport.

As well as planning, other measures are needed to minimize disease transmission in particular circumstances. For COVID-19, most countries imposed national lockdowns and social distancing policies to control its rapid dispersion. Several studies investigating the lockdown effectively managed and prevented the spread of the pandemic. Nevertheless, the study's findings are reminders to continue addressing air pollution issues to protect human health.<sup>23</sup> As a result, the critical regions with widespread confirmed cases of COVID-19 should be urged to maintain lockdown. It is encouraging to compare pre COVID-19 air pollution with that found during the lockdown period. Industrial and mobility activities were reduced, and selected pollutants: NO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions were reduced by approximately 20 - 40% in 2020.<sup>24</sup> It is essential to measure atmospheric chemistry, emission trends, and meteorology lockdown effects on pollutant concentrations.<sup>25</sup> In addition, Hypoxia is observed in COVID-19 patients; however, patients exhibit a distinct phenotype. Intracellular nitric oxide (NO) levels are essential in the vasodilation of small vessels.<sup>26</sup>

From the previous discussion, it is recommended that planners generally prioritize public transportation, walking on foot, and cycling instead of prioritizing the car. Expanding bicycle use and increasing the cycling speed is one way to reduce the cross-vehicle motor and emissions of CO<sub>2</sub> and increase people's activity. Increased physical activity also improves public health. Mobility actively gives people the opportunity to physically build a movement in everyday life during daily trips because they often do not have enough time to go to the gym. Progress has been achieved in creating and expanding bike tracks, but this will only succeed if the tracks are well marked, secure, and part of the network. Besides, in the concept New Urban Model, physical activity (PA) and the use of digital facilities by citizens increased during the COVID-19 pandemic;

the first increased fitness and reduced close personal contacts.<sup>27,28</sup> The next section focuses on alternative transportation, especially the use of bikes.

### *City by Bike*

It has been demonstrated that implementing the health protocol of COVID-19 and applying the concept of healthy city results in preventing or reducing COVID-19. Here the focus is on bicycles (bikes). Cycling, in general, can help usher in a post-coronavirus society.<sup>29</sup> The Netherlands is known as a cyclist-friendly city. Citizens more often choose to travel by bicycle, the foot or using public transport. Cycling is a cost-effective solution. These results were consistent with those of other studies and suggest that bike-sharing advantages help respond to the COVID19 pandemic and reduce air pollution.<sup>16,30</sup>

The effects of COVID-19 on the transportation sector are being studied extensively. Transport policies (e.g., for the use of bikes) can lead to reducing social contact to limit infection rates by using online platforms to deliver materials and food).<sup>31,32</sup> The COVID-19 pandemic has resulted in a dramatic shift in the demand for safe and physically segregated outdoor walking, cycling and commerce spaces. Cities worldwide have responded by enacting various policies and programs aimed at addressing these changes.<sup>33</sup> In Switzerland, cycling is increasing, especially if there is an increase in traffic congestion, and is becoming a habit.<sup>34</sup> Bike-sharing can help respond to the COVID19 pandemic.<sup>30</sup> It has been found that the possibility of infection occurs in public transportation, so that, in a COVID-19 situation, bikes are a recommended alternative, if possible.<sup>30,35</sup> There is a significant potential for e-bikes as a substitute for public transportation in post-pandemic cases. These findings can develop appropriate first policy interventions in future urban transport strategies to promote and strengthen bicycle sharing.<sup>36,37</sup> The COVID-19 pandemic is revealed from the pattern of urban mobility. Green Europe offers a 'road map' of a comprehensive strategy that aims to create a more frugal European Union with power and sustainability and a great opportunity to make cities carbon neutral.<sup>38</sup> As well, cities can be more habitable and healthier through better urban and transport planning.

More details about bikeways are provided in the following, with examples of implementation. One of the ways that can be taken is properly assigning tracks (bike lanes). The width of the bike track in Bangkok, Thailand, is about 1.4 meters. Hiking is given the color green with a picture of people riding bicycles on it. Bike tracks are explicitly made in between asphalt and pavement. The dividing lines for bikes use a separator colored yellow as high as 30 cm. In Singapore, through the Land and Transport Authority (LTA) body and several bodies, the Ministry of Transport organizes the City. It equipped it with bike tracks targeting the 700 km track bike that covers the entire country. Bicycle lanes in Singapore were made by reducing and managing the pedestrian footpath. In the settlement area, particular pathways come with signs mainly for cyclists. Some lines mark the park connector network (PCN) or network that can move from park to park and other city gardens. Each lane is equipped with manual directions to facilitate cyclists getting to the desired location. Singapore is widely equipped with areas for parking bicycles. The Netherlands is referred to as one of the cities most friendly to cyclists. Amsterdam was called a paradise for cyclists in the world. The development of bicycles took some time. Previously, after the second world war, the existence of bikes was eroded by cars. The Netherlands has started to implement the Woonerf system or share the joint road for a variety of users.<sup>39</sup>

The Woonerf system is designed to slow the driver as cars, bicycles, and pedestrians share the same space. There is no special separator that limits bicycle lanes to motorized vehicles, only a white line, both of which are confined. Göttingen, Germany, is considered cyclist-friendly. Some

regulations prohibit the honking (harassing) of cyclists by cars and motorcycles. The bike path in the city is only about three meters wide. Typically, bike tracks were given a different color from the pedestrian lanes. In Germany, bike trails are not restricted to the City but may have intercity links. Bikes are safe and comfortable, and cyclists' facilities, including places to park bikes, are also reasonably plentiful.

Bike paths in Moscow, Russia, are similar to those in Singapore. The bicycle paths in Moscow, nicknamed a thousand parks, almost connect the entire City. One of them is in Gorky Park, in which the bike path can be connected to the metro or stations. Locating bike tracks on the pavement beside roadways eliminates the possibility of collision with vehicles such as cars or motorcycles. For additional safety, closed-circuit television (CCTV) constantly monitors every street corner in case there is a violation. There are many bicycle rental locations in Denmark. In the town, bike tracks are located on the right of the asphalt road. There is a bit of pavement between bike lanes and the road- highway. During busy times in Copenhagen, 62% of the population travels by bicycle to work or study. At each intersection, the bike path is colored blue. There are also traffic and other lights that are specifically for the bike. Electric bicycles are also allowed to use the bike tracks. Every building must have a bicycle park. The number of parked bicycles is not small as in Indonesia. There are dozens of bikes parked in buildings. Motor vehicle riders prioritize pedestrians, so this should minimize harm to walkers. Many bridges are reserved for the bike rider.

#### *Strategic Direction (Indonesia)*

All the concepts discussed above emphasize access to green space, which is essential for various reasons, including mental health, cognitive function, and hope for the future. Strategies are needed to create green spaces such as gardens and to introduce more vegetation in the streets. Where feasible, it needs to dig up the asphalt and plant many trees, which will reduce the urban heat effect, contribute to the absorption of CO<sub>2</sub>, and is a health benefit. The Jakarta Provincial Government is stepping up bike lanes to reduce traffic congestion and air pollution. A 200-kilometer build bicycle lane with a pattern of "35," i.e., every 5 meters of white-lined bicycle lanes, there will be a 3-meter-long green marking block. The comprehensive proposal of around sixty-two billion (IDR) is to construct an advanced bicycle path. Previously, Jakarta was also awarded the *Sustainability Transportation Awards (STA)*. Jakarta was the first City in Southeast Asia to get the award in the area of transportation.<sup>40</sup>

#### **Conclusion and Recommendation**

A healthy city strategy to manage the COVID-19 pandemic is a challenge and must cover planning and action. Healthy city concepts provide a multidisciplinary approach for involving people such as architects and city designers, decision-makers, public health experts, and local health authorities, promoting measures and procedures to transform the city into a healthier place, with more amenable neighborhoods during the COVID-19 pandemic. Some cities have introduced a New Urban Model that includes managing population density, green space, and transport. Planning for a car-free city that reduces air pollution will create a healthier environment. Promoting walking and outdoor exercise outdoor gym/outdoor exercise encourages safe physical activity and increases existing green space. Cycling is an inexpensive form of exercise and contributes to reducing pollution and improving physical, psychological, and social fitness/health to increase endurance necessary for the COVID-19 pandemic.

## Abbreviations

COVID-19: coronavirus disease 2019 caused by SARS-CoV-2; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2 previously provisionally named 2019 novel coronavirus or 2019-nCoV (Lai, Shih 2020); CCTV: closed-circuit television; EU: European Union countries; IDR: Indonesian Rupiah; LTA: Land and Transport Authority; Mer's: Middle East Respiratory Syndrome; PA: the physical activity; PM10: Particulate Matter of 10 Microns in diameter or smaller People-in-Monitoring; WHO: World Health Organization.

## Ethics Approval and Consent to Participate

Not Applicable.

## Competing Interests

The authors declare no competing interests.

## Availability of Data and Materials

The authors have full access to all the data in the study and take responsibility for the data integrity.

## Authors' Contribution

HH conceived the study. HH and PD wrote the main manuscript text, and all authors contributed to interpreting the results. All authors read and approved the final manuscript.

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**Re: Proof Approval Letter\_Special Issue 2021**

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I have checked the dummy article, and I give minor corrections highlighted by yellow. Please see the document attached.

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Yours sincerely,

Hamzah Hasyim (on behalf of all authors)

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We would like to inform you that your manuscript entitled "COVID-19 AND THE CITY: A HEALTHY CITY STRATEGY TO PANDEMIC CHALLENGES FROM PLANNING TO ACTION" will be published in Volume 16 Special Issue No 1.

Please fill and sign the proof approval letter. The dummy article is still in process. We will send it as soon as possible. Please send back the proof approval letter by replying to this email within 24 hours.

Thank you.

Regards,  
Editor in chief  
Dewi Susanna

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## Dummy Article Confirmation

1 message

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29 July 2022 at 20:57

Dear Hamzah Hasyim,

Good evening,

We would like to send you the dummy of the article "Analysis of COVID-19 Preventive Behavior in Diabetes Mellitus Patients: A Literature Review" that will be published on Vol.17 (Special Issue 1), 2022. There are some highlights and notes that need to be confirmed. Please also confirm the whole article, whether there is typo on the article or the figure, miss spell, or else.

We would like to hear from you as soon as possible.

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# COVID-19 and The City: A Healthy City Strategy for Pandemic Challenges, from Planning to Action

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## Abstract

COVID-19 is a respiratory disease caused by SARS-CoV-2, a new coronavirus discovered in 2019. WHO declared COVID-19 is a respiratory disease caused by SARS-CoV-2 as a pandemic that the detection level of cases changed daily, and it can track almost in real-time. This paper used a narrative literature review to address issues of urban quality and lack of exercise. The specific aim was to discuss the concept of a healthy city, indicate a new urban model, and advocate for the increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological, and social fitness. A healthy city can improve residents' health by improving conditions of life to face COVID-19 pandemics. It needs the local capacity to prevent the spread of the diseases and design public health concepts concerning the built environment and contemporary towns in a new urban model. Dialogue opportunities in public health can provide essential guidance for designers (architects and town planners), decision-makers, public health experts, and health agencies locally, promoting the actions and policies to transform the city into a healthier neighborhood and salutogenesis.

**Keywords:** city by bike, COVID-19, healthy city, new urban model

## Introduction

COVID-19 is a respiratory disease caused by SARS-CoV-2 (coronavirus 2019; previous 2019 - nCoV), a new coronavirus discovered in 2019. The virus is transmitted from person to person through respiratory secretions and contact, mainly through sneezing and coughing.<sup>1</sup> The novel coronavirus outbreak has spread to many other countries. On January 30, 2020, the Committee of Emergency World Health Organization (WHO) announced a global health emergency based on notifications of cases that continued to increase in China and other international locations. It was declared a pandemic by the WHO.<sup>2</sup> The detection level of issues changes every day and can be tracked almost in real-time on the website provided by Johns Hopkins University and others forums. WHO has recorded more than 96 million cases of pandemic COVID-19 occurring globally, with the possibility of doubling and more than two million deaths confirmed.<sup>3</sup> Globally, as of 4:52 p.m. CEST, June 9, 2021, there have been 173,674,509 confirmed cases of COVID-19, including 3,744,408 deaths, reported to WHO. As of June 7, 2021, a total of 2,092,863,229 vaccine doses have been administered.<sup>4</sup>

Pandemics in the 20th and 21st century are primarily transmitted through direct contact with body fluids (AIDS, Ebola) or breathing (pandemic influenza, SARS-CoV-2 Mers), in contrast to the past, when the oral-fecal (Cholera) or vectorial (Malaria, Plague) routes predominated and could be controlled by public health sanitation. It has led to dramatic action in many countries, e.g., China, Singapore, Japan, Italy, Spain, and many other countries. In those areas, lockdown, social distancing, hand sanitizing, and wearing masks have been and, in some, still are mandatory.<sup>5</sup>

On the other hand, urban density, population, and housing favor the spread of COVID-19 in living quarters and at meetings, and on public transport. One of the studies aimed to understand the urban-centric nature of the infection found that transit mediums, especially rail and aviation, were positively associated.<sup>6</sup> The risk of transmission COVID-19 is enhanced by the proximity of people, inequality of economic and social conditions, which in turn, are associated with housing the poor and uncertain conditions of life.<sup>7,8</sup> Currently, according to the United Nations, 55% of the world's population live in cities, and this is expected to rise to 68% by 2050.<sup>9</sup> To

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take effective measures in addressing urban health, the various sectors need to be integrated (i.e., a holistic intersectoral approach). Stakeholders include the health and other government departments, non-government organizations, the private sector, and the public. A Healthy City project aims to bring together public, private, and voluntary partnerships to focus on urban health problems in a participatory manner broadly and improve residents' health by improving conditions of life. Thus, developing a cross-sectoral approach integrated with community participation is an essential feature of healthy cities.

In addition, environmental planning and design for public health are essential. Data from several sources have identified that airborne viruses are carried on fine particles spreading into the environment. Deforestation, global warming, and atmospheric pollution can accelerate the spread of viruses such as SARS-CoV-2.<sup>10</sup> Another study investigated the relationship between air pollutants and COVID-19 spread in Jakarta, Indonesia, during the impact of large-scale social restriction (LSSR). During the LSSR period, the air pollution index (API) of PM<sub>2.5</sub>, PM<sub>10</sub>, CO, SO<sub>2</sub>, and NO<sub>2</sub> decreased by 9.48%, 15.74%, 29.17%, 6.26%, and 18.34%, respectively. In contrast, O<sub>3</sub> increased by 4.06%. Another study discovered significant positive correlations between SO<sub>2</sub>, CO, and PM<sub>2.5</sub> and COVID-19 cases. The area has become vulnerable to COVID-19 infection due to SO<sub>2</sub>, CO, and PM<sub>2.5</sub> exposure.<sup>11</sup>

The health of city populations depends on the condition of life and style of living. Factors in the day-to-day life, which significantly affect health status, are referred to as "determinants of health." These include the availability of water, sanitation, nutrition, food safety, health care, housing and working conditions, education, lifestyle, demography, and changes in income. In addition, environmental, physical, social, and economic factors are included. Improving the determinants of health is not easy in many situations. Encouraging increased use of bicycles, outdoor gym/outdoor exercise, walking to reducing pollution, and improving physical, psychological,

and social fitness is a continuing concern within a healthy city's concept.

For this reason, it needs comprehensive action to deal with the COVID-19 pandemic, not only in implementing the health protocol of COVID-19 but also applying the concept of a healthy city, which reduces environmental pollution and also provides health benefits to people. For example, outdoor gym/outdoor exercise, walking, and cycling contribute to reducing air pollution and improving the community's physical, psychological, and social fitness. Therefore, this article aimed to discuss the concept of a healthy city, suggest a new urban model, and advocate for increased outdoor exercise, including bicycle use and walking, and providing activity that reduces air pollution. This study also offered a strategic direction with some focus on Indonesia.

**Method**

This article conducted a narrative literature review using ScienceDirect search engine. The inclusion criteria were literature searched from 2020 to 2021 (the last two years) based on keywords relevant to the topics of interest. The searches included the terms of: "healthy city strategy," "new urban model," and "city by bike" in connection with COVID-19. The kind of article was recorded, for example, if it was a review or a research article and if available with Open Access. Articles that were not available in Open Access were excluded. The articles selected were analyzed qualitatively based on the information about healthy city strategy, new urban model, and city by bike and in the context of COVID-19.

**Results**

The recent paper using a narrative literature review by ScienceDirect engine, found 61 articles, 51 in 2021 and 10 in 2020, with seven review articles and 54 research articles. There were 22 kinds of Open Access articles, 19 in 2021 and 3 in 2020 selected based on exclusion and inclusion criteria. These included one review article and 21 research articles in a range of areas



Figure 1. A Literature Search from ScienceDirect Engines



including Social Sciences, Engineering, Environmental Science, Decision Sciences, Medicine and Dentistry, Economics, Econometrics and Finance, and Energy.

Finally, the articles were reviewed and discussed using a comprehensive, critical, and objective analysis of the current knowledge to lead to a healthy city strategy to minimize COVID-19 and improve the community's general health. The literature search strategy from ScienceDirect engines is shown in Figure 1.

Critical articles reported in the scoping review helped identify seven lessons learned for cities from the COVID-19 pandemic in the post-pandemic era. Moglia *et al.* outlined three urban missions to guide a green urban recovery. These are to speed up the changes to urban mobility, achieve sustainable urban development, and build resilient urban infrastructure. They defined six transition pathways for urban mobility, energy, food, housing, health, and nature. These pathways can provide a roadmap for green recovery in cities while also increasing resilience.<sup>12</sup> Given that recent evidence predicts that urban cycling will continue to grow in Latin American cities, it is critical to implement policies and educational/training improvements to improve cyclist safety and health in the cities.<sup>13</sup> To become sustainable, cities are experiencing transformative changes. Identifying and describing the increasing adoption of big data technologies can assist policymakers and planners in assessing the benefits and costs when implementing sustainable urban transformations.<sup>14</sup>

## Discussion

Exploring a Healthy City strategy to deal with a pandemic is a challenge from planning to action. This section discusses the following areas: a healthy city, a new urban model, and a city by bike (increased exercise and pollution reduction).

### Healthy City

World Health Organization (WHO) published a manifesto for healthy and green recovery from COVID-19, including building healthy and decent habitation. Creating a healthy city is important during Pandemic COVID-19, which requires support and investment. Healthy cities are defined as cities that constantly develop and improve the physical and social environment and expand the power base of communities that enable people to support each other to carry out all life functions mutually. Healthy Cities is a global attempt to prioritize the agenda for a social, economic, and political government town. For the past 30 years, the WHO European Healthy Cities Network has included approximately 100 major cities and about 30 national networks.

Population growth in urban areas is a global phenomenon, and countries in the Pacific West area are no exception. It is great to make cities carbon neutral, more

habitable, and healthier by transport and city planning. Recently, the WHO for the Region Pacific West has been working together with its members, developing several Healthy City initiatives to improve the health of urban areas. However, it is not easy to measure the results: an index is required, standards set, and the impact of each component of health needs to be determined. It further supports the idea that rating the effect of fitness is required to develop public policy.

Furthermore, the main features of the Healthy City project include a political commitment with high levels of collaboration amongst the cross-sectoral community; community participation; integration of activities; development of urban health profiles and local action plans; monitoring and evaluation periodically. In addition, there needs to be participatory research and analysis, sharing information, media engagement, the incorporation of views from all groups in the community, sustainability mechanisms, connection with society and the development of human beings, and national and international networks. The measurement involves ten metrics of healthy lifestyles, including the rate of obesity and pollution levels. Each metric is assigned a score, which is then added to yield a score out of 100. The Spotahome Healthiest Cities Index showed that Amsterdam was number one in 2018.<sup>15</sup>

Information about public health can provide valuable rules and guidance for designers (architects and town planners), decision-makers, expert public health, and health agencies locally, promoting holistic policies and actions to transform the city into more healthy neighborhoods.<sup>16</sup> These factors may explain the relatively good correlation between a multidisciplinary approach to develop systemic operational skills capable of dealing with complexity and a paradigm for assessing the effects of the current pandemic. The contemporary challenge is how to re-design public health concepts concerning the built environment and new cities? The following section considers this question, with examples from cities that have implemented a healthy city approach and standards of human behavior to minimize COVID-19 transmission.

### New Urban Model

Urbanization can reduce human hardship and suffering, so urban health development must create sustainable urban communities, promoting healthy living, cross-sectoral approaches and political will, and comprehensive urban renewal programs.<sup>17</sup> Previous studies have demonstrated that urbanization has taken place rapidly in the past two decades.<sup>18</sup> Urbanization is expected to continue in the years to come, particularly in developing countries. While urbanization provides opportunities for employment, education, and socioeconomic development, it also raises several issues of health detriment related to determinants of health (intro-

duced above). Health is related to the adequacy of medical health services. However, it is also associated with the urban physical, social, and economic environment, and society's lifestyle and behavior. Planning can remediate some of the health problems caused by poor quality in the determinants. Therefore, the solution to the problem of urban health areas requires the effective involvement of the non-health sector (e.g., industry, transport, energy work, education, commerce, utilities, and services the City, planning the City, and other similar items). Besides, it included the organization of non-governmental, private sector, and community.

In some cities, a new planning concept has been introduced to overcome planning problems, and it includes the condensed City, large blocks, 15-Minute City away, car-free, or a combination of them. Condensed (or 'solid') cities are characterized by a high density of settlements and shorter travel distances. They have lower emissions of CO<sub>2</sub> than extensive cities and are healthier because of the diverse land use, briefer travel trips, and the opportunity for healthier mobility options. For example, Barcelona (Spain) plans to make more than 500 superblocks to reduce vehicle motor traffic and provide more space for people, traveling is active, and green space.<sup>19</sup> This superblock will reduce air pollution, noise levels, and heat islands effects while increasing green space and physical activity. It is estimated that they can prevent nearly 700 premature deaths in the city each year.

Similar principles were applied in other countries. France introduced a model of the 15-Minute City so that places of work, school, entertainment, and activities of others can be reached within 15 minutes walking. The 15-Minute City concept is a quite radical approach and will require monitoring.<sup>20</sup> It also provides the possibility of reducing inequality as it is a model that involves the mixing of groups of the population that differs from a model zoning settlement related to the status of the social economy. It also will reduce travel distance and thus reduce both CO<sub>2</sub>, air pollution, and noise level. Hamburg (Germany) plans to be free from cars by 2034 to overcome the climate crisis.<sup>21,22</sup> A car-free city reduces personal motor vehicle use and can provide easy access to public transport and increase physical activity. Another successful example is Vauban in Freiburg, Germany, with a neighborhood without cars and sustainable housing. To conclude this section, the healthy city strategy reduces air pollution and noise levels, increases physical activity, and creates space for green areas - the new urban models of urban reverse the planning pyramid for transport.

As well as planning, other measures are needed to minimize disease transmission in particular circumstances. For COVID-19, most countries imposed national lockdowns and social distancing policies to control its rapid dispersion. Several studies investigating the lock-

down effectively managed and prevented the spread of the pandemic. Nevertheless, the study's findings were reminders to continue addressing air pollution issues to protect human health.<sup>23</sup> As a result, the critical regions with widespread confirmed cases of COVID-19 should be urged to maintain lockdown. It is encouraging to compare pre COVID-19 air pollution with that found during the lockdown period. Industrial and mobility activities were reduced, and selected pollutants: NO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions were reduced by approximately 20 - 40% in 2020.<sup>24</sup> It is essential to measure atmospheric chemistry, emission trends, and meteorology lockdown effects on pollutant concentrations.<sup>25</sup> In addition, Hypoxia is observed in COVID-19 patients; however, patients exhibit a distinct phenotype. Intracellular nitric oxide (NO) levels are essential in the vasodilation of small vessels.<sup>26</sup>

From the previous discussion, it is recommended that planners generally prioritize public transportation, walking on foot, and cycling instead of prioritizing the car. Expanding bicycle use and increasing the cycling speed is one way to reduce the cross-vehicle motor and emissions of CO<sub>2</sub> and increase people's activity. Increased physical activity also improves public health. Mobility actively gives people the opportunity to physically build a movement in everyday life during daily trips because they often do not have enough time to go to the gym. Progress has been achieved in creating and expanding bike tracks, but this will only succeed if the tracks are well marked, secure, and part of the network. Besides, in the concept New Urban Model, physical activity (PA) and the use of digital facilities by citizens increased during the COVID-19 pandemic; the first increased fitness and reduced close personal contacts.<sup>27,28</sup> The next section focuses on alternative transportation, especially the use of bikes.

### City by Bike

It has been demonstrated that implementing the health protocol of COVID-19 and applying the concept of healthy city results in preventing or reducing COVID-19. Here the focus is on bicycles (bikes). Cycling, in general, can help usher in a post-coronavirus society.<sup>29</sup> The Netherlands is known as a cyclist-friendly city. Citizens more often choose to travel by bicycle, the foot or using public transport. Cycling is a cost-effective solution. These results were consistent with those of other studies and suggest that bike-sharing advantages help respond to the COVID-19 pandemic and reduce air pollution.<sup>16,30</sup>

The effects of COVID-19 on the transportation sector are being studied extensively. Transport policies (e.g., for the use of bikes) can lead to reducing social contact to limit infection rates by using online platforms to deliver materials and food).<sup>31,32</sup> The COVID-19 pandemic has resulted in a dramatic shift in the demand for safe and physically segregated outdoor walking, cycling and com-

merce spaces. Cities worldwide have responded by enacting various policies and programs aimed at addressing these changes.<sup>33</sup> In Switzerland, cycling is increasing, especially if there is an increase in traffic congestion, and is becoming a habit.<sup>34</sup> Bike-sharing can help respond to the COVID-19 pandemic.<sup>30</sup> It has been found that the possibility of infection occurs in public transportation, so that, in a COVID-19 situation, bikes are a recommended alternative, if possible.<sup>30,35</sup> There is a significant potential for e-bikes as a substitute for public transportation in post-pandemic cases. These findings can develop appropriate first policy interventions in future urban transport strategies to promote and strengthen bicycle sharing.<sup>36,37</sup> The COVID-19 pandemic is revealed from the pattern of urban mobility. Green Europe offers a 'road map' of a comprehensive strategy that aims to create a more frugal European Union with power and sustainability and a great opportunity to make cities carbon neutral.<sup>38</sup> As well, cities can be more habitable and healthier through better urban and transport planning.

More details about bikeways are provided in the following, with examples of implementation. One of the ways that can be taken is properly assigning tracks (bike lanes). The width of the bike track in Bangkok, Thailand, is about 1.4 meters. Hiking is given the color green with a picture of people riding bicycles on it. Bike tracks are explicitly made in between asphalt and pavement. The dividing lines for bikes use a separator colored yellow as high as 30 cm. In Singapore, through the Land and Transport Authority (LTA) body and several bodies, the Ministry of Transport organizes the City. It equipped it with bike tracks targeting the 700 km track bike that covers the entire country. Bicycle lanes in Singapore were made by reducing and managing the pedestrian footpath. In the settlement area, particular pathways come with signs mainly for cyclists. Some lines mark the park connector network (PCN) or network that can move from park to park and other city gardens. Each lane is equipped with manual directions to facilitate cyclists getting to the desired location. Singapore is widely equipped with areas for parking bicycles. The Netherlands is referred to as one of the cities most friendly to cyclists. Amsterdam was called a paradise for cyclists in the world. The development of bicycles took some time. Previously, after the second world war, the existence of bikes was eroded by cars. The Netherlands has started to implement the Woonerf system or share the joint road for a variety of users.<sup>39</sup>

The Woonerf system is designed to slow the driver as cars, bicycles, and pedestrians share the same space. There is no special separator that limits bicycle lanes to motorized vehicles, only a white line, both of which are confined. Göttingen, Germany, is considered cyclist-friendly. Some regulations prohibit the honking (harassing) of cyclists by cars and motorcycles. The bike path in

the city is only about three meters wide. Typically, bike tracks were given a different color from the pedestrian lanes. In Germany, bike trails are not restricted to the City but may have intercity links. Bikes are safe and comfortable, and cyclists' facilities, including places to park bikes, are also reasonably plentiful.

Bike paths in Moscow, Russia, are similar to those in Singapore. The bicycle paths in Moscow, nicknamed a thousand parks, almost connect the entire City. One of them is in Gorky Park, in which the bike path can be connected to the metro or stations. Locating bike tracks on the pavement beside roadways eliminates the possibility of collision with vehicles such as cars or motorcycles. For additional safety, closed-circuit television (CCTV) constantly monitors every street corner in case there is a violation. There are many bicycle rental locations in Denmark. In the town, bike tracks are located on the right of the asphalt road. There is a bit of pavement between bike lanes and the road - highway. During busy times in Copenhagen, 62% of the population travels by bicycle to work or study. At each intersection, the bike path is colored blue. There are also traffic and other lights that are specifically for the bike. Electric bicycles are also allowed to use the bike tracks. Every building must have a bicycle park. The number of parked bicycles is not small as in Indonesia. There are dozens of bikes parked in buildings. Motor vehicle riders prioritize pedestrians, so this should minimize harm to walkers. Many bridges are reserved for the bike rider.

### **Strategic Direction (Indonesia)**

All the concepts discussed above emphasize access to green space, which is essential for various reasons, including mental health, cognitive function, and hope for the future. Strategies are needed to create green spaces such as gardens and to introduce more vegetation in the streets. Where feasible, it needs to dig up the asphalt and plant many trees, which will reduce the urban heat effect, contribute to the absorption of CO<sub>2</sub>, and is a health benefit. The Jakarta Provincial Government is stepping up bike lanes to reduce traffic congestion and air pollution. A 200-kilometer build bicycle lane with a pattern of "35," i.e., every 5 meters of white-lined bicycle lanes, there will be a 3-meter-long green marking block. The comprehensive proposal of around sixty-two billion (IDR) is to construct an advanced bicycle path. Previously, Jakarta was also awarded the Sustainability Transportation Awards (STA). Jakarta was the first City in Southeast Asia to get the award in the area of transportation.<sup>40</sup>

### **Conclusion and Recommendation**

A healthy city strategy to manage the COVID-19 pandemic is a challenge and must cover planning and action. Healthy city concepts provide a multidisciplinary approach for involving people such as architects and city



designers, decision-makers, public health experts, and local health authorities, promoting measures and procedures to transform the city into a healthier place, with more amenable neighborhoods during the COVID-19 pandemic. Some cities have introduced a New Urban Model that includes managing population density, green space, and transport. Planning for a car-free city that reduces air pollution will create a healthier environment. Promoting walking and outdoor exercise outdoor gym/outdoor exercise encourages safe physical activity and increases existing green space. Cycling is an inexpensive form of exercise and contributes to reducing pollution and improving physical, psychological, and social fitness/health to increase endurance necessary for the COVID-19 pandemic.

#### Abbreviations

COVID-19: coronavirus disease 2019 caused by SARS-CoV-2; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2 previously provisionally named 2019 novel coronavirus or 2019-nCoV (Lai, Shih 2020); CCTV: closed-circuit television; EU: European Union countries; IDR: Indonesian Rupiah; LTA: Land and Transport Authority; Mer's: Middle East Respiratory Syndrome; PA: the physical activity; PM10: Particulate Matter of 10 Microns in diameter or smaller People-in-Monitoring; WHO: World Health Organization.

#### Ethics Approval and Consent to Participate

Not applicable.

#### Competing Interest

The authors declare no competing interests.

#### Availability of Data and Materials

The authors have full access to all the data in the study and take responsibility for the data integrity.

#### Authors' Contribution

HH conceived the study. HH and PD wrote the main manuscript text, and all authors contributed to interpreting the results. All authors read and approved the final manuscript.

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**Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>  
To: Hamzah Hasyim <hamzah.hasyim@gmail.com>

5 October 2021 at 09:34

Dear Hamzah Hasyim,  
Along with saying our gratitude for your time in researching and entrusting your study to be published in our journal, hereby we attach the certificate of becoming a contributing writer for Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal) Volume 16, Special Issue 2021.  
We are looking forward to having your writing again in the near future.

Regards,  
Editor in Chief  
Dewi Susanna

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# CERTIFICATE

awarded to

## Hamzah Hasyim

as a contributing writer in

**Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)**

**Volume 16, Special Issue No 1, July 2021**

with the title of

**"COVID-19 and The City: A Healthy City Strategy for Pandemic Challenges, from Planning to Action"**

Editor-in-Chief of

Kesmas: National Public Health Journal



Prof. Dr. Dewi Susanna, dra., MS.

NIP. 196312021988032002





Dr.rer.med.Hamzah Hasyim &lt;hamzah@fkm.unsri.ac.id&gt;

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**Invoice: Manuscript Handling Fee Payment**

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**Jurnal Kesmas** <jurnalkesmas.ui@gmail.com>  
To: hamzah fkmunsri <hamzah@fkm.unsri.ac.id>

5 August 2022 at 11:38

Dear Hamzah Hasyim,

We would like to inform you of the manuscript-handling fee for your article "**Analysis of COVID-19 Preventive Behavior in Diabetes Mellitus Patients: A Literature Review**" published in **Special Issue, July 2022**.

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Thank you.

Best Regards,

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Prof. Dewi Susanna, MS

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hamzah fkmunsri &lt;hamzah@fkm.unsri.ac.id&gt;

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