
PENGEMBANGAN MEDIA KOMUNIKASI, INFORMASI DAN EDUKASI GERAKAN UNTUK BERSEPEDA SECARA AMAN, NYAMAN DAN SEHAT

DEVELOPMENT OF COMMUNICATION MEDIA, INFORMATION, AND EDUCATION ON SAFE, COMFORTABLE, AND HEALTHY BICYCLE MOVEMENTS

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Abstrak

Penelitian dan pengembangan ini bertujuan untuk menghasilkan produk media komunikasi, informasi dan edukasi gerakan sepeda aman, nyaman dan sehat. Pendekatan penelitian dan pengembangan media edukasi poster dan leaflet ini mengadaptasi tahapan penelitian dan pengembangan oleh Borg dan Gall yang secara garis besar terdapat 4 tahapan, yaitu: (1) studi pendahuluan; (2) perencanaan dan pengembangan; (3) validasi, evaluasi dan revisi; (4) implementasi. Penelitian dan pengembangan ini dilaksanakan di kota Malang dan kota Solo dengan menggunakan target sasaran komunitas sepeda. Teknik analisis data yang digunakan dalam penelitian dan pengembangan menggunakan pendekatan kualitatif dan kuantitatif. Data kualitatif diperoleh dari hasil pertanyaan terbuka. Data kuantitatif diperoleh melalui hasil pengisian angket yang dilakukan pada uji validasi ahli, uji coba kelompok kecil dan uji coba kelompok besar. Hasil uji validasi yang dilakukan oleh ahli materi dan ahli media diperoleh persentase berturut-turut sebesar 86% dan 83.13%. Pada hasil uji coba kelompok kecil diperoleh nilai persentase sebesar 89.19%, sedangkan pada uji coba kelompok besar diperoleh nilai persentase sebesar 89.30%. Seluruh hasil pengujian terhadap produk baik pada tahap uji validitas maupun kepraktisan memiliki kriteria sangat baik. Adanya media ini diharapkan menjadi salah satu alat yang dapat meningkatkan pengetahuan, serta dapat merubah perilaku komunitas atau individu dengan menerapkan perilaku bersepeda secara baik dan benar.

Kata kunci: sepeda, aman, nyaman, sehat, media.

Abstract

This research and development aim to produce communication, information and education media products for safe, comfortable and healthy bicycle movements. The research and development approach for educational media posters and leaflets adapts the stages of research and development by Borg and Gall which outlines 4 stages, namely: (1) preliminary study; (2) planning and development; (3) validation, evaluation and revision; (4) implementation. This research and development was carried out in Malang city and Solo city using the target target bicycle community. Data analysis techniques used in research and development use qualitative and quantitative approaches. Qualitative data is obtained from the results of open questions. Quantitative data is obtained through the results of filling out questionnaires conducted in expert validation tests, small group trials and large group trials. The results of the validation test conducted by material experts and media experts obtained a percentage of 86% and 83.13% respectively. The results of the small group trial obtained a percentage value of 89.19%, while in the large group trial obtained a percentage value of 89.30%. All the results of testing the product both at the validity and practicality test stages have very good criteria. It is hoped that this media will become an instrument that can increase knowledge and change the behavior of communities or individuals by implementing cycling behavior properly and correctly.

Keywords: bicycle, safe, comfortable, healthy, media.

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INTRODUCTION

The global coronavirus (COVID-19) pandemic has had a major impact on all aspects and everyday lives of people around the world. In Indonesia, the number of positive cases of COVID-19 as of April 2021 has reached 1,571,824 people, starting with the announcement of the first patient on March 2, 2020 ([Kompas Cyber Media, 2021](#)). In response to the COVID-19 pandemic, the government took many steps to provide protection to slow the spread of the virus so that the transmission rate did not continue to increase. The steps taken by the government have significantly changed the order of life and mobility of society. An important step taken by the government as an effort to break the chain of transmission of COVID-19 is the establishment of large-scale social restrictions through Government Regulation (PP) Number 21 of 2020 concerning large-scale social restrictions (PSBB) in the context of accelerating the handling of COVID-19 ([Wibowo, 2020](#)). Apart from that, the President also issued Presidential Decree Number 11 of 2020 concerning determining the COVID-19 public health emergency ([Gitiyarko, 2020](#)). Since then, a massive social distancing campaign has been carried out to prevent the transmission of COVID-19.

In addition to the COVID-19 issue, the rise of cycling, especially commuting, in big cities with heavy traffic is also problematic ([de Hartog et al., 2010](#)). Several existing studies have looked at all-day exposure to air pollution in cities and found that people get peak exposure to black carbon from fossil fuels while cycling, a fine particulate matter PM_{2.5} ([Rojas-Rueda et al., 2011](#)). That's a pollutant that raises public health concerns when levels in the air are high. And it's also worse for cyclists than those who use public transit to commute ([Cepeda et al., 2017](#)). Existing air pollution exposes cyclists to fine particles in polluted air that penetrate deep into the lungs and cardiovascular system, causing a range of diseases including stroke, heart disease, cancer and respiratory infections. It is also important to note that there are a growing number of findings that the air does not have to be foggy to be harmful ([Oja et al., 2011](#)). The small particles found in the air, including dust, dirt, soot and smoke are responsible for the most adverse health effects. Asbestos dust particles from car brake pads, road dust, fumes from diesel-fueled vehicles can all be contributing factors to respiratory health risks for cyclists ([Apparicio et al., 2018, 2021](#)).

Social distancing measures or even lockdown measures will have the potential to affect physical activity levels and sedentary behavior ([Ammar et al., 2020](#); [Bourdas & Zacharakis, 2020](#); [Jakobsson et al., 2020](#); [University College London, 2020](#)). In fact, several studies report that social distancing and lockdown measures have had a significant effect on reducing physical activity and increasing sedentary behavior ([Meyer et al., 2020](#); [Schuch et al., 2020](#)), including children and patients with various medical conditions ([Huber et al., 2020](#); [Stockwell et al., 2021](#)). Changes in physical activity patterns and sedentary behavior as a reaction to COVID-19 can be permanent and lead to an increased risk of obesity, diabetes, and cardiovascular disease ([Dunton et al., 2020](#); [Hall et al., 2021](#)). However, on the other hand, social restrictions or lockdowns have had an impact on shifting physical activity patterns, especially in choosing active modes of transportation and types of sport, one of which is cycling. The "bike boom" phenomenon occurred in various regions of the world, including Indonesia ([Bernhard, 2020](#)). The surge in traffic and sports activities in various cities is also increasing, including in China, Germany, Ireland, the United Kingdom, and the United States ([Lindsey, 2021](#); [Schwedhelm et al., 2020](#)). In some cities, for example, Buenos Aires and Philadelphia, cycling increased by 150% during the COVID-19 outbreak ([Goetsch & Quiros, 2020](#)). The cycling trend during the COVID-

19 pandemic also occurred in Indonesia (Geken, 2021; Rahmawaty, 2020; Wibowo, 2020). The Institute for Transportation and Development Policy (ITDP) reported that there was an increase in bicycle users by 1000 percent at several points in the city of Jakarta (Geken, 2021; Rahmawaty, 2020; Wibowo, 2020). The same spike also occurred in several big cities in Indonesia, such as Surabaya, Yogyakarta, Bandung, Semarang, Surakarta, and several other big cities (Beribe, 2020). This is very normal because, apart from being an active transportation option, the increase in cycling activity also occurs because people are increasingly aware of the importance of maintaining health to protect themselves from COVID-19. Apart from that, this cycling exercise option is considered the safest, according to WHO recommendations.

It is important to note that physical activity and exercise not only maintain physical and psychological health but also help our body respond to the negative consequences of several diseases such as diabetes, hypertension, cardiovascular disease, and respiratory disease (Lavie et al., 2019). In the context of COVID-19, physical activity has been shown to improve physical and mental health and is a highly recommended element to provide protection against COVID-19 (Schuch et al., 2020; Simpson & Katsanis, 2020), including obesity, hypertension, heart disease, and respiratory diseases (Cunningham, 2021; Dwyer et al., 2020; Füzéki et al., 2020). The results of studies on other viral infections also show that people who are physically active will have less severe symptoms with faster recovery times and are less likely to infect others (Simpson & Katsanis, 2020). Additional analysis shows that physical activity moderates the relationship between COVID-19 cases and death rates, so that the two variables are very closely related when physical activity levels are low (Cunningham, 2021).

When viewed physiologically, cycling activity is equivalent to other activities with the same intensity, duration, and frequency, such as manual work, sports, training, or walking (Götschi et al., 2016). It is clear that the health benefits derived from cycling outweigh the potential negatives resulting from the risk of traffic accidents and increased exposure to pollution. Cycling as a form of physical activity and sport has long been investigated to have various health benefits, in addition to reducing pollution and traffic (de Hartog, et al., 2010; Lindsay, et al., 2011; Rojas-Rueda, et al., 2013; Rojas-Rueda, et al., 2011). Study results show that regular cycling can improve mental health (Gatersleben & Haddad, 2010), aerobic capacity, cardiorespiratory fitness, reduce blood pressure accompanied by improvements in lipid profile, and decrease body fat (Chavarrias et al., 2019; Fraser & Lock, 2011; Møller et al., 2011; Oja et al., 2011; Pucher & Buehler, 2012). Cycling is a safe choice for individuals who still want to do physical activity and protect themselves from COVID-19, and it even provides another option to be able to travel safely without using mass transportation.

The increase in cycling activities, whether in the form of commuting or as a choice of sport, hobby, or recreational activity carried out by people during the COVID-19 pandemic, is a positive trend. However, the main focus on the differences between cycling under normal conditions and COVID-19 pandemic conditions needs to be the main reference so as not to contract the COVID-19 virus. Several problems arise due to the increase in bicycle users, including many cyclists who ignore the COVID-19 health protocols (Himawan, 2020; Prima, 2020) and lack of attention to road safety (Ashari, 2020). Many cases of COVID-19 transmission still occur due to cycling activities (Larassaty, 2020; Rukmorini, 2020); there were also 29 traffic accidents involving cyclists, which caused 17 cyclists to die during the period January to June 2020 (Ahdira, 2020; Dewanda, 2020; Rahadiansyah, 2020). Therefore, information and education on health protocols to prevent COVID-19 and the safety aspects of cycling are priorities so that the positive impact of cycling can be optimized.

Given the many physical and mental benefits of increasing physical activity and reducing sedentary behavior through cycling, public health strategies should include the creation and implementation of interventions that promote safe physical activity and reduce sedentary behavior if social distancing or other lockdowns occur. In an effort to convey the message so

that it reaches cyclists, an appropriate strategy for conveying information through the media and utilizing existing technology is needed. The development of leaflets and posters is one way to spread awareness about preventing the transmission of COVID-19 and cycling safety in the midst of the current pandemic.

METHOD

This research and development approach to poster and leaflet educational media adapts the research and development stages described by Borg and Gall ([Gall et al., 2003](#)). These stages are modified according to research and development objectives, and in general, there are 4 stages: (1) preliminary study; (2) planning and development; (3) validation, evaluation, and revision; and (4) implementation. Flow of stages of research and development of posters and leaflets as educational media.

This research and development was carried out in the city of Malang and the city of Solo, using bicycle community targets in both cities. In the preliminary study, researchers conducted an initial discussion in the form of a focus group discussion (FGD), which was conducted online via the Google Meet application by inviting a number of figures in the bicycle community in each city. There are 3 bicycle communities in the city of Malang and 4 bicycle communities in the city of Solo. Furthermore, 20 community members took part in small group product trials, and 80 other members also took part in large group trials. Research and development were carried out from June to September 2020.

Questionnaires are used as the main instrument in expert validity tests, small group trials, and large group trials. Two types of questions, namely closed and open, were asked in the questionnaire to gather data about expert opinions and targets regarding the product being developed. Data analysis techniques used in research and development use qualitative and quantitative approaches. Qualitative data was obtained from the results of open questions submitted during expert validation tests, small group trials, and large group trials. Responses, suggestions, and criticism submitted by experts and targets are then summarized, grouped into main and important things, and taken into consideration when revising and improving the product. Quantitative data was obtained through the results of filling out questionnaires carried out in expert validation tests, small group trials, and large group trials. The quantitative data results were then analyzed using a Likert scale ([Bernstein, 2005](#)), which was described qualitatively.

Calculation of the total score for each question variable using a percentage with the formula $(\text{value}/\text{total value}) \times 100\%$. The maximum score percentage is 100%, and the minimum score percentage is 0%. Range is the maximum score minus the minimum score, whose value is 100% of the interval width (100% divided by 5 scales) to get 20%. Based on the calculation of the percentage range and qualitative criteria, it can be seen below ([Sugiyono, 2008](#)).

Tabel 1. Percentage range and qualitative criteria

Percentage	Category
81% - 100%	Excellent
61% - 80%	Good
41% - 60%	Fairly Good
21% - 40%	Poor
0% - 20%	Not Good

Source: ([Sugiyono, 2008](#))

RESULTS

Referring to the research and development stages of communication, information, and educational media in the form of posters and leaflets with the theme of safe, comfortable, and

healthy riding during the COVID-19 pandemic, a preliminary study was carried out by collecting study materials through literature study and observation. The benefits of cycling, both individually and collectively, have been proven by numerous studies. However, cycling in urban areas is also associated with health and safety risks due to the potential for high traffic density and exposure to air pollution and road traffic noise. Prolonged exposure to air pollution and noise can jeopardize an individual's health and well-being by increasing the risk of respiratory and cardiovascular diseases, certain types of cancer, various other disorders and stress. Due to high ventilation rates, cyclists are also more at risk of inhaling more air pollutants than pedestrians, compared to other transit users. Despite the higher exposure of cyclists, the benefits of cycling outweigh the health risks.

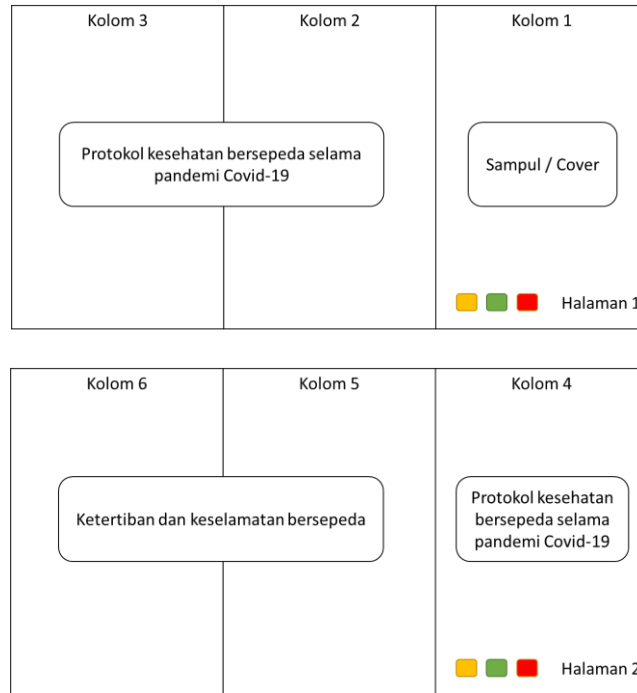


Figure 1. Initial Leaflet Design (21 cm x 29.7 cm)
Source: (Researcher Documentation)



Figure 2. Initial Poster Design (29.7 X 42 cm)
Source: (Researcher Documentation)

At this initial stage, discussions were also held in the form of a focus group discussion (FGD) involving several bicycle communities in the cities of Malang and Solo online. As a result

of the search for topics researched and developed, it was found that up to now there is still no specific educational media regarding cycling health and safety protocols that must be fulfilled during the COVID-19 pandemic, considering the differences between cycling during normal times and during a pandemic like now. Apart from that, the results of document searches using search engines still found many problems related to violations of health protocols while cycling, clusters of COVID-19 transmission caused by cycling activities, as well as violations of traffic rules (Detik News, 2020; Madani, 2020; Sasongko, 2020). In line with the results of literature and documentation studies, the results of the FGD also show that the level of knowledge of cyclists regarding health protocols that must be implemented during the COVID-19 pandemic is still relatively low (Alfirdaus & Susanto, 2021; Anggraini, 2021; Arifianto et al., 2022; Souliissa et al., 2022; Sungadi & Tane, 2022; Widianingrum, 2022). The lack of information and education regarding this matter is the main focus of the FGD results, so there is a need for media that can communicate, provide information, and educate on how to cycle safely, comfortably, and healthily during the COVID-19 pandemic.

The findings of the preliminary study became the basis for researchers' development of communication, information, and education media by choosing leaflet and poster media types. The scope of the problems that arise is the initial material in compiling the initial design or design of the media being developed. Several aspects that are highlighted in this initial design are the health, order, and safety protocols for cycling during the COVID-19 pandemic. The results of the initial design are then developed to compile the content into posters and leaflets.

After the initial design is formed, the next stage is to validate, evaluate, and revise the product being developed. At this stage, expert validation and small group and large group trials are carried out sequentially, accompanied by revisions. Expert validation involved 2 material experts and 2 media experts, while the trial involved a total of 100 people divided into 2 groups, namely 20 people in the small group trial and 80 people in the large group trial. The results of expert validation and trials carried out by filling out questionnaires can be summarized as follows.

Tabel 2. Expert validation results, small and large group trials

Component	Question Items	Results Score	Maximum Score	Percentage	Category
Material Expert Validation	20	172	200	86	Excellent
Media Expert Validation	16	133	160	83,13	Excellent
Small Group Trials	16	1427	1600	89.19	Excellent
Large Group Trials	16	5715	6400	89.30	Excellent

Based on the results of validation tests carried out by material experts, by giving 20 questions in the questionnaire, a total score of 712 was obtained from a maximum score of 200, so it has a percentage of 86%, which means that the material contained in communication, information, and education media is in the form of posters and leaflets. Falls into the very good category. The media assessment perspective on the product being developed is represented in 16 questions, which are then validated by media experts. The total score obtained was 133 out of a maximum score of 160 with a percentage of 83.13, which means that the communication, information, and education media developed were in the very good category based on the assessment of media experts.

In the results of the small group trials on 20 people representing 7 cycling communities, from the 16 questions given in the questionnaire, a score of 1427 was obtained from a maximum score of 1600, or a percentage of 89.19. These results indicate that communication, information, and education media in the form of posters and leaflets are in the very good category. Large group trials carried out on 80 representatives of the cycling community obtained a result score

of 5715 out of a maximum score of 6400, resulting in a percentage of 89.30. This percentage means that communication, information, and education media packaged in the form of posters and leaflets are in the very good category.

Tabel 3. Media revision results

Media Type	Before Revision	After Revision
Leaflets		
Poster		

Source: (Researcher Documentation)

Based on the results of the open questions, several main and important things were also obtained, which were taken into consideration when revising the product. Input and suggestions obtained from open questions submitted by material experts included changing several sentences to be more effective and efficient so as to make it easier for the target audience, changing several appeals or messages into more firm and clear invitations, adding several illustrations to provide reinforcement in the delivery of the message, and adding several sub-messages such as the proper and correct use of masks. Meanwhile, media experts provided several inputs related to the contrast of the text used in the media, accuracy in choosing font colors (letters) with background colors (background), choosing clearer and bolder typefaces,

and using illustrations that support the content and message that were delivered. The small group and large group trials produced several inputs, including: the message was conveyed effectively and efficiently, so it was necessary to reduce the length of sentences; adding tips and tricks for safe cycling during the pandemic; adding material on how to use masks properly and correctly; and adding several pictures to make it clearer. The results of the revised media are presented on table 3.

DISCUSSION

This research and development has the main aim of creating communication, information, and educational media in the form of posters and leaflets. In order to achieve targets in efforts to disseminate a program, it is necessary to understand the appropriate information delivery strategy, accompanied by accuracy in selecting the media used (WHO, 2007; Rombean et al., 2021; Son et al., 2019). There are five aspects that underlie the development of communication, information, and education media for safe, comfortable, and healthy cycling activities, including: (1) WHAT: the core message to be conveyed; (2) WHO: the group to whom the message will be delivered; (3) KNOW: knowledge that the target group is expected to know; (4) WILL: behavior that the target group is expected to accept and carry out; (5) PATH and MEDIA: What is the most appropriate way to reach the target group? This is in accordance with determining the choice of effective communication media, namely by identifying the issues that are being developed, then mapping the segmentation of groups in society, in this case the community groups who currently enjoy cycling activities, determining the target group that will be the target of socialization, and creating strategies and packaging the message to be conveyed (Sispanyadi et al., 2021; Warsita, 2014)

In the midst of the COVID-19 pandemic situation, communication and education efforts make it impossible to gather many people due to the implementation of health protocols. Alternatives are needed in efforts to convey information and education, which can be done by creating various content to be disseminated through various online media or other social media (Akbar, 2021; Assabila & Sefrina, 2022; Assidiqi & Sumarni, 2020; Frederick & Maharani, 2021). Likewise, education about safe, comfortable, and healthy cycling needs to be carried out optimally so that there is no spike in cases of COVID-19 transmission due to increasing cycling activities, and this becomes contradictory to the health benefits you want to obtain. Providing education and information communicated through various online media is one option that is considered the most appropriate (Akbar, 2021; Angraini et al., 2020; Assabila & Sefrina, 2022; Frederick & Maharani, 2021; Handayani et al., 2021; Lubis et al., 2021; Sampurno et al., 2020). By using various content that is easily accepted by the public, especially the target audience, the educational process for safe, comfortable, and healthy cycling can be run without ignoring the health protocols recommended by the government.

The leaflets and posters that have been developed are intended as an effort to lay the foundation for a socio-cultural mechanism that can guarantee the ongoing acceptance process and provide as clear information as possible regarding the security, comfort, health, and safety aspects of cyclists during the COVID-19 pandemic. Communication, information, and education media that have been developed in the form of posters and leaflets seek to bridge the problems that arise in order to increase knowledge, attitudes, and practices so as to avoid the transmission of COVID-19 and provide warnings for cyclists to maintain the safety of themselves and others when cycling on the road. It is hoped that the existence of communication, information, and education media in the form of leaflets and posters can lead to a process of behavior change in a better direction (Maisyarah et al., 2021; Megasari et al., 2022; Setiyaningsih, 2017; Silalahi et al., 2018; Tindaon, 2017), increased knowledge accompanied by changes in attitudes, and be implemented with steady practice as an effort to prevent the transmission of COVID-19 and ensure road safety. Communication, information, and

education that is carried out intensively and is directed and right on target is one of the key activities to change attitudes, behaviors, and value systems ([Direktorat Promosi Kesehatan dan Pemberdayaan Masyarakat Kementerian Kesehatan RI, 2022](#); [Hartanto, 2018](#)). The leaflet and poster media that have been developed in this study also have a deep purpose in the context of changing knowledge, which in turn is aimed at changing mental attitudes and skills. So, these change efforts must be carried out continuously, planned, and systematically.

The main aim of developing safe, comfortable, and healthy cycling leaflets and posters is to produce health promotion media to increase the knowledge of the target audience, which in this case is people who are passionate about cycling during the COVID-19 pandemic. Therefore, the leaflets and posters developed contain important information and material regarding how people can continue to carry out cycling activities safely in accordance with health protocols and still obtain various benefits. The information contained in the leaflets and posters developed is about choosing the right mask when cycling, health protocols that must be adhered to when cycling, rules and safety for cycling on the road, tips for safe cycling, and equipment to bring when cycling during the pandemic. The material and information presented in leaflets and posters are prepared based on the latest sources from various research results, which have also been declared very appropriate by material experts. All presentations contained in posters and leaflets are presented in simple, short, and clear language in a coherent, systematic manner, accompanied by pictures that represent the explanation so that it attracts readers. This kind of presentation technique has been proven to be able to help improve readers' memory ([Indriyani, 2018](#); [Jannah et al., 2016](#); [Oktaviana, 2021](#); [Siregar, 2022](#)). The results of the assessment by material experts also showed very good results, with a very feasible category for each assessment indicator.

Through a series of research and development stages carried out, starting from preliminary studies to large group trials, the results were obtained that communication, information, and education media in the form of leaflets and posters were included in the very good category; however, there were several suggestions that were taken into consideration when revising the developed media. There was 1 leaflet and 5 posters, which were successfully developed according to needs and conditions. In its development, this medium emphasizes the power of messages, visuals, and colors so that they can influence a person's behavior and attitude towards safe, comfortable, and healthy cycling. This is done considering that the main factor that is the benchmark for the success of media communication is how the media that has been created can create interest, increase knowledge, increase understanding, and change the behavior of the target audience ([Andriyani, 2017](#); [Nida, 2014](#); [Pramono, 2016](#); [Ruyadi et al., 2017](#)).

CONCLUSION

The need to provide education on safety and comfort in order to gain the health benefits of cycling must change the speed, urgency, and priority in creating safe, comfortable, and healthy spaces for cyclists to carry out physically distanced cycling activities for governments around the world. Efforts to change knowledge, attitudes, and skills are not limited to informative activities; more than that, they must be carried out continuously, planned, and implemented systematically. This research and development has produced communication, information, and educational media in the form of leaflets and posters as media used to promote, socialize, and educate about safe, comfortable, and healthy cycling activities. It is hoped that the existence of GANAS media will become an instrument that can increase knowledge and change the behavior of communities or individuals by implementing cycling behavior properly and correctly.

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