

COVID-19 Prevention: Healthy and Clean-Living Behavior Program on Toilet Access in Tiban New Village, Batam City, Indonesia

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ABSTRACT

Background: The current low level of prevention of COVID-19 is one of the severe problems in Indonesia. Healthy and Clean-Living Behavior or PHBS (Perilaku Hidup Bersih dan Sehat) program and sanitation access are some things that can be done in terms of prevention during a pandemic. New Tiban Village ranks 3rd with the highest number of COVID-19 cases in Batam City. **Objective:** This study aims to determine whether there was a relationship between implementing the Healthy and Clean-Living Behavior program and toilet access on the incidence of COVID-19 in New Tiban Village, Batam City, Indonesia. **Methods:** A quantitative analytic observational study with a total sample of 115 families. The instrument used in this study was a questionnaire. The acquired data were analyzed with chi-square analysis using SPSS as the tool. **Results:** The results showed a significant relationship between the application of the Healthy and Clean-Living Behavior program towards COVID-19 cases $p = 0.006$. There was an effective relationship between toilet access towards COVID-19 cases $p = 0.000$. **Conclusion:** In this study, there was a significant relationship between applying the Healthy and Clean-Living Behavior program and toilet access toward COVID-19 with a value of $\alpha < 0.05$. Recommendations for the community include always carrying out health protocols by maintaining distances and always washing hands using running water and soap after activities outside the home. **Keywords:** COVID-19, Healthy and Clean-Living Behavior Program, Toilet Access

INTRODUCTION

Coronavirus disease is abbreviated as COVID-19 and occurred in 2019. WHO defines coronaviruses as a group that can cause infections in humans and animals. Despite coronavirus being discovered in 2019, the condition has been around for a long time. There are several types of coronaviruses. They can cause respiratory infections in humans, ranging from coughing, runny nose, and shortness of breath to respiratory failure (Yayi Suryo Prabandari, 2020).

In response to the Amendment to Regulation Number: 2269/MENKES/PER/XI/2011 of Regulation Number 2269, the Ministry of Health of the Republic of Indonesia formulates guidelines for guidance on Healthy and Clean Living Behavior in Indonesia through a healthy and clean living behavior

management pattern (Widodo, Sri Wijastuti and Kurniawati Darmaningrum, 2021). All groups are expected to follow the behaviors listed. In addition to lifestyle habits at home and the environment, factors like the community and environment also contribute to Healthy and Clean Living Behavior (Karuniawati, 2020) (Sulaiman Endang Sutisna, 2021)(Marlinae *et al.*, 2019).

This program makes sure that family members and individuals, understand how to make healthier decisions and play a more active role in community health activities (Penyehatan Lingkungan Dinas Propinsi Kepulauan Riau, 2012)(Martina, 2021)(Burhan *et al.*, 2021). Developing the Healthy and Clean Living Behavior is based on the principle that prevention is better than cure. As outlined in (Keputusan Menteri Kesehatan Republik Indonesia, 2020)(Maliga, Rafi'ah

and Hasifah, 2021), the main objective of this initiative is to improve healthcare quality through the cultivation of knowledge, which is the foundation for contributing to a clean and healthy daily life. Furthermore, it creates health-conscious individuals who make positive life choices by maintaining a level of cleanliness according to standards (NSPK, 2020)(Karuniawati, 2020).

The concept of healthy and clean living also includes all the activities that a person carries out when playing an active role in their health and the health of others. Unfortunately, not everyone understands what it means to live a healthy life. This is proved by the fact that many people still carry out various activities regardless of their health levels; one example is when a child finishes doing a job outside the house, parents do not get used to the child washing their hands and feet when they enter the house; the child is left to do new activities. Another example is when the cleanliness of the bathroom is not paid attention to and is left alone, especially in terms of the cleanliness of the bath (Levani, Y., Prastya, 2021)(Maliga, Rafi'ah and Hasifah, 2021). These behaviors may seem trivial but have a significant impact when they become habits. For this reason, notification or information related to knowledge about the Healthy and Clean Living Behavior program is needed in the community so that awareness grows of the importance of implementing the behaviors in the community for the health and welfare of family members (Tentama, 2018)(Dit. PL, 2013)(Chandra, 2007).

The prevention of COVID-19 is closely linked to healthy and clean living behaviors. Hand sanitizers (at least 70% alcohol) and soaps are some of the means to prevent being infected with COVID-19. Washing hands is also an indicator of the Healthy and Clean-Living Behavior program. A mask must be worn when traveling, a distance of at least 1 meter must be maintained from other people, the elbows must be folded when coughing or sneezing, and using tissues must be the only method of touching one's mouth, nose, or eyes and traveling with them must be avoided. Clean objects, surfaces, and tools that are often used, especially those that are used in general, consume a balanced nutritious diet, do not smoke, do take regular breaks, exercise, and

think positively (Peraturan Menteri Kesehatan Reublik Indonesia No. 65 Tahun 2013, no date)(Pusat Promosi Kesehatan Kementerian Kesehatan Republik Indonesia, 2013). Constantly monitor the progress of the COVID-19 disease from official and accurate sources. Follow directions and information from health workers and the local Health Office (Kementerian Kesehatan RI, 2020)(Departemen Kesehatan RI, 2010).

Some health behaviors that can reduce the possibility of being infected or spreading COVID-19 by implementing Clean and Healthy Behavior include constantly washing hands, maintaining a distance of 1-3 meters, avoiding outdoor activities with crowds, avoiding touching eyes, nose and mouth, staying at home and self-isolate even with mild symptoms. In addition, by increasing knowledge about implementing the Clean and Healthy Behavior program, which relates to preventing the spread of COVID-19, attitudes in responding to it, and actions that must be carried out according to applicable regulations (Karuniawati, 2020)(UNICEF East Asia and Pacific Regional, 2013).

In addition, the level of sanitation is also very influential in the transmission of COVID-19 disease, one of which is access to healthy latrines. Several factors need to be considered to properly handle human feces as part of a solid waste management system, starting with ensuring that toilets/latrines are functioning and safe, septic tanks are in good condition, and waste is transported and processed (WHO and UNICEF, 2020)(Peraturan Menteri Kesehatan RI No: 416/Per/IX/1990, no date)(Azwar A, 1995).

WHO reported that from the beginning of the COVID-19 outbreak to the last update on March 17, 2021, there were 120,383,191 confirmed cases, with 2,664,386 deaths resulting from the disease (World Health Organization, 2021). As of March 2021, data from Indonesia, with the last updated data in March 2021, showed that 1,437,283 people were confirmed positive for COVID, 1,266,673 recovered, and 38,915 people died (Komite Penanganan Covid-19 dan Pemulihan Ekonomi Nasional, 2021)(Badan Penelitian dan Pengembangan Kesehatan Kemenkes RI, 2013). In addition, data on COVID-19 cases in Batam City, the area

with the highest COVID-19 issues was Tiban Baru Village, with 81 patients (Dinas Kesehatan Kota Batam, 2021)(Saputra, Utami and Nuraini, 2021).

This study aims to determine whether there was a relationship between implementing of the Clean and Healthy Lifestyle program and toilet access on the incidence of COVID-19 in New Tiban Village, Batam City, Indonesia.

METHODS

This study used a quantitative analytic observational study with a cross-sectional research design (Notoatmodjo, 2010)(Nugrahaeni & Mauliku, 2011). The population in this study was the community of Tiban Baru Village, Batam City, totaling 170 families. The sample size was measured using the Slovin formula (31). The number of samples was 115; the model was taken by a simple random sampling method with statistical analysis using the chi-square test.

The variables in this study consisted of the independent variable being the Healthy and Clean-Living Behavior program and toilet access, and the dependent variable was the incidence of COVID 19.

The measurement method for each variable in this study was the application of the Healthy and Clean-Living Behavior program variable using a questionnaire measuring instrument and an ordinal measuring scale. Meanwhile, the toilet access variable used an observation sheet and an ordinal measuring scale, and the COVID-19 Cases variable was taken from secondary data from the Batam City Health Office.

Ethical Clearance

This study received an approval from the Research Ethics Committee, Faculty of Public Health, Sriwijaya University No. 234/UN9.1.10/KKE/2021.

RESULTS AND DISCUSSION

The research results obtained were univariate and bivariate. The univariate results were that the application of the Healthy and Clean-Living Behavior program in the “Not good” category had 71 respondents (61.7%) and the “Good” category had 44 respondents (38.3%); and that the toilet access in the “Yes” category had 40 respondents

(24.8%) and the “No” category had 75 respondents (65.2%). The results of the COVID-19 cases in the “Yes” category had 81 respondents (70.4%), and in the “No” category had 34 respondents (29.6%), which can be seen in table 1.

Table 1. Demographic Characteristics (N=115)

INDICATORS	n	%
Application of Healthy and Clean Living Behavior program		
Not Good	71	61.7
Good	44	38.3
Toilet Access		
Yes	75	65.2
No	40	34.8
COVID-19 Cases		
Yes	81	70.4
No	34	29.6

Application of Healthy and Clean Living Behavior Program Toward COVID-19 Cases

Based on the analysis results, it can be seen that the application of the Healthy and Clean-Living Behavior program variable obtained $p = 0.006$, meaning there was a significant relationship between the application of the Healthy and Clean-Living Behavior program towards COVID-19 cases in Tiban Baru Village, Batam City, which can be seen in table 2.

Table 2. Distribution of Application of Healthy and Clean-Living Behavior Program Towards COVID-19 Cases

V*	COVID-19 Cases				Total		P-Value
	Yes		No		(N)	(%)	
G**	57	49.5	14	12.2	71	61.7	0.006
NG***	24	20.9	20	17.4	44	38.3	
Has	81	70.4	34	29.6	100	100	

*Application of Healthy and Clean-Living Behavior Program

**Good

***Not Good

The application responds to active and observable stimuli, contrary to the passive attitude that cannot be observed. Supporting the philosophy into action required facilities, but the parties keep a vital role. The level itself has 1) perception, which is expected to recognize various objects connected to the action taken. 2) response, namely the

movement of someone by carrying out something following the provisions. 3) the stage where someone has acted correctly. 4) is a practice or action that has developed well, meaning that the action has been modified without reducing the truth of the action (Maryunani, 2013)(Ditjen Cipta Karya, no date).

On this occasion, the researcher assumed that the people of Tiban Baru Village, the research respondents had wrong actions at the home environment level (activities while at home and around). The community was still not disciplined to carry out the regulations and apply them to family members regarding the health protocols that the government has set. However, this can still be improved by increasing the knowledge of the community itself and the participation of health parties such as the *puskesmas* (public health centre), *posyandu* (integrated service post for pre- and postnatal health care), and others(Ahmadi and Saputra, 2021).

In line with the results of research conducted by Patmawati et al (2021) that there was a significant relationship between clean and healthy living behavior with the use of personal protective equipment in the Wonomulyo district traditional market Polewali Mandar in preventing COVID-19 with a p-value of 0.049 ($p > \alpha$). (Patmawati, Ningsi and Lisnawati, 2021)

Availability of Toilet Access Towards COVID-19 Cases

Based on the analysis results, it can be seen that the toilet access variable obtained $p = 0.000$, meaning there was a significant relationship between toilet access towards COVID-19 cases in Tiban Baru Village, Batam City, which can be seen in table 3.

Table 3. Distribution of Toilet Access Towards COVID-19 Cases

Toilet Access	COVID-19 Cases				Total (%)	P-Value	
	Yes		No				
	(n)	(%)	(n)	(%)			
No	67	58.3	0.000	6.9	75	65.2	0,000
Yes	14	12.1	26	22.7	40	34.8	
Has	81	70.4	34	29.6	100	100	

Patients who are confirmed or suspected of being infected with COVID-19 must be given access to a separate toilet or latrine separate from the patient's room. Toilets with flushing (flush toilets) must be able to function

correctly. Where possible, bathrooms must be flushed when the toilet lid is lowered to prevent splashing droplets or aerosol vapors. If it is not possible to provide a separate toilet from the patient's room, the bathroom must be cleaned and disinfected at least twice a day by trained staff, and the staff must wear PPE (cloaks, gloves, boots, masks, face coverings, or goggles). Furthermore, by applicable guidelines, employees and medical personnel must access separate toilet facilities from the patient's toilet (WHO and UNICEF, 2020)(Departemen Kesehatan RI, 2006).

WHO recommends using a standard and well-maintained plumbing system, for example, closed bathroom drains, valves on spray hoses, and faucets to prevent feces in the form of aerosols from entering the water supply and ventilation systems (World Health Organization, 2006) and implementing standardized wastewater treatment (World Health Organization, 2018). Errors in plumbing systems and poor ventilation system design were factors that contributed to the spread of SARS coronavirus particles in high-rise apartment buildings in Hong Kong in 2003 (Yu *et al.*, 2004). Similar concerns were raised regarding the spread of the COVID-19 virus in high-rise apartment buildings through room design errors bathing (Regan H., 2020). Suppose the health care facility is connected to a sewer; in that case, a risk assessment must be carried out to determine whether the wastewater flows safely in the sewer system (to ensure that the sewer is not leaking) before the wastewater arrives at the final disposal and further treatment is carried out. Risks also include the adequacy of the waste collection system to cure. The disposal mechanism must also be analyzed to ensure safety (42) and determine critical control points to prioritize mitigation plans.

This is in line with the results of research conducted by Ramadhan Tosepu (2021) that the availability of toilets meeting the requirements was very closely related to the risk of transmitting COVID-19(Tosepu *et al.*, 2021).

The weakness of this research is that it was conducted in the early days of COVID-19, so the number of samples measured was still small. Meanwhile, the strength of this research is that the topic

being researched was relatively new, so it can provide an initial perception for people who are looking for information about COVID-19.

CONCLUSION

Based on the analysis results and discussion of the research, it can be concluded that 71 respondents (61.7%) who had the application were in the "Not Good" category and 44 respondents (38.3%) were in the "Good" category. 75 respondents (65.2%) who had toilet access were in the "No" category, and 40 respondents (34.8%) were in the "Yes" category. Meanwhile, in COVID-19 cases, 81 respondents (70.4%) were in the "Yes" category, and 34 respondents (29.6%) were in the "No" category. There was a significant relationship between the application of the Healthy and Clean Living Behavior program towards the COVID-19 cases with a $p = 0.006$. There was a substantial relationship between toilet access towards COVID-19 cases with a $p = 0.000$.

Recommendations for the community include always carrying out health protocols by maintaining a distance and always washing hands using running water and soap after activities outside the home.

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REFERENCES

Ahmadi, A. and Saputra, R. (2021) 'STATUS ANALYSIS OPEN DEFECATION FREE (ODF) OF LAND AVAILABILITY AND ECONOMIC STATUS IN SAGULUNG DISTRICT, BATAM CITY', *Jurnal Kesehatan Ibnu Sina (J-KIS)*, 2(01), pp. 1-7.
Azwar A (1995) 'Pengantar Ilmu Kesehatan Lingkungan. Jakarta.: Mutiara Sumber'.
Badan Penelitian dan Pengembangan

Kesehatan Kemenkes RI (2013) *Riset Kesehatan Dasar*.

Burhan, A. et al. (2021) 'Bahan Ajar Pelatihan Sederhana Untuk Media Pembelajaran Berbasis Labseries 2020', *Journal Lepa-Lepa*

Chandra, B. (2007) 'Pengantar Kesehatan Lingkungan', in. Jakarta: Buku Kedokteran EGC.

Departemen Kesehatan RI (2006) 'Pedoman Pengembangan Desa Siaga. Lampiran Keputusan Menteri Kesehatan RI No 564/Menkes/VIII/2006'. Jakarta.

Departemen Kesehatan RI (2010) 'Perilaku Hidup Bersih Sehat. Jakarta', in *Depkes RI*. Jakarta.

Dinas Kesehatan Kota Batam (2021) *Data Konfirmasi COVID-19 di Kota Batam Tahun 2021*.

Dit. PL, D. P.-P. K. K. R. I. (2013) 'Kurikulum dan Modul Pelatihan Fasilitator Pemberdayaan Masyarakat Bidang Kesehatan', in *Buku Sisipan STBM*. Jakarta.

Ditjen Cipta Karya, D. P. P. L. P. K. P. U. (no date) 'Sanitasi Perkotaan Berbasis Masyarakat', in. Jakarta.

Karuniawati, B. B. P. (2020) 'Gambaran Perilaku Hidup Bersih Dan Sehat (PHBS) Dalam Pencegahan Penularan Covid-19', *Jurnal Kesehatan Karya Husada*, 8(2), pp. 34-53.

Kementerian Kesehatan RI (2020) *Kesiapan Kementerian Kesehatan RI Dalam Menghadapi Outbreak Novel Coronavirus*, https://www.papdi.or.id/pdfs/817/dr_Siti_Nadia_-_Kemenkes_RI.pdf.

Keputusan Menteri Kesehatan Republik Indonesia (2020) 'Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MenKes/413/2020 Tentang Pedoman Pencegahan dan Pengendalian Corona Virus Disease 2019 (Covid-19)', *MenKes/413/2020*, 2019, p. 207.

Komite Penanganan Covid-19 dan Pemulihan Ekonomi Nasional (2021) *Data Sebaran Covid-19*, <https://covid19.go.id/>.

Levani, Y., Prastya, A. D. (2021) 'Coronavirus Disease 2019 (COVID-19): Patogenesis, Manifestasi Klinis dan Pilihan Terapi', *Jurnal Kedokteran Dan Kesehatan*, 17(1), pp. 44-57.

Maliga, I., Rafi'ah, R. and Hasifah, H. (2021) 'Penyuluhan Perilaku Hidup Bersih Dan Sehat Di Masa Pandemi Covid-19 Pada Pemulung Tempat Pembuangan Akhir Sampah Di Kabupaten Sumbawa', *Jurnal Pengabdian Masyarakat Indonesia*, 1(2).

doi: 10.52436/1.jpmp.10.

Marlinae, L. et al. (2019) 'Buku Ajar Dasar-Dasar Kesehatan Lingkungan', *Fakultas Kedokteran Universitas Lambung Mangkurat Banjarbaru*.

Martina, P. (2021) *Promosi Kesehatan dan perilaku Kesehatan*, *Journal of Chemical Information and Modeling*. Edited by R. Watrionthos. Yayasan Kita Menulis.

Maryunani, A. (2013) *Perilaku Hidup Bersih dan Sehat*. Trans Info media.

Notoatmodjo (2010) *Metodologi Penelitian*. Jakarta: PT. Rineka Cipta.

NSPK (2020) *Pedoman Program Perilaku Hidup Bersih dan Sehat (PHBS)*, *Direktorat Pembinaan Pendidikan Anak Usia Dini Direktorat Jenderal Pendidikan Anak Usia Dini dan Pendidikan Masyarakat Kementerian Pendidikan dan Kebudayaan dan UNICEF*.

Nugrahaeni & Mauliku (2011) *Metodologi Penelitian Kesehatan*. Cimahi: STIKES A.Yani Press.

Patmawati, Ningsi, S. and Lisnawati (2021) 'HUBUNGAN PERILAKU HIDUP BERSIH DAN SEHAT TERHADAP KEJADIAN COVID-19 DI PASAR WONOMULYO LATAR BELAKANG Pasar termasuk tempat-tempat umum di mana banyak orang berkumpul menjaga suatu bentuk interaksi atau hubungan satu sama lain . interaksi antara penjual d', pp. 127-137.

Penyehatan Lingkungan Dinas Propinsi Kepulauan Riau (2012) *Perkembangan Sanitasi Total Berbasis Masyarakat (STBM)*.

Peraturan Menteri Kesehatan Reublik Indonesia No. 65 Tahun 2013 (no date) 'Tentang Pedoman Pelaksanaan dan Pembinaan Pemberdayaan Masyarakat Bidang Kesehatan'.

Peraturan Menteri Kesehatan RI No: 416/Per/IX/1990 (no date) *Syarat-Syarat Pengawasan Kualitas Air*.

Pusat Promosi Kesehatan Kementerian Kesehatan Republik Indonesia (2013) 'Penuntun Hidup Sehat', in. Jakarta.

Regan H. (2020) *How can the coronavirus spread through bathroom pipes? Experts are investigating in Hong Kong.*, *CNN*.

Saputra, R., Utami, I. H. and Nuraini, A. (2021) 'IMPLEMENTASI PENCEGAHAN COVID-19 DI PELABUHAN INTERNASIONAL BATAM CENTER DI BATAM', *Jurnal Kesehatan Ibnu Sina (J-KIS)*, 2(02), pp. 20-29.

Sulaiman Endang Sutisna (2021) *PEMBERDAYAAN MASYARAKAT DI BIDANG KESEHATAN: Teori dan Implementasi - Endang Sutisna Sulaiman - Google Buku*. Yogyakarta: Gadjah Mada University Press.

Tentama, F. (2018) 'PENERAPAN PERILAKU HIDUP BERSIH DAN SEHAT (PHBS) DEMI KESEJAHTERAAN MASYARAKAT KECAMATAN TUNTANG KABUPATEN SEMARANG JAWA TENGAH', *Jurnal Pemberdayaan: Publikasi Hasil Pengabdian Kepada Masyarakat*, 1(1), p. 13. doi: 10.12928/jp.v1i1.309.

Tosepu, R. et al. (2021) 'Gambaran Sanitasi Lingkungan Dan Penerapan Protokol Kesehatan Masa New Normal Pada Tenaga Kerja Di PT Pelindo IV Cabang Kendari Tahun 2021', *Jurnal Kesehatan Masyarakat Celebes*, 2(03), pp. 26-38.

UNICEF East Asia and Pacific Regional (2013) 'Community Led Total Sanitation in East Asia and Pacific Progress, Lessons and Directions (Review of the status of community-led sanitation implementation in East Asia and Pacific)', in. UNICEF East Asia and Pacific Regional.

WHO and UNICEF (2020) 'Air, Sanitasi, Higiene, dan Pengelolaan Limbah yang Tepat Dalam Penanganan Wabah COVID-19', *World Health Organization*, pp. 1-10.

Widodo, Z. D., Sri Wijastuti and Kurniawati Darmaningrum (2021) 'GERMAS (Gerakan Masyarakat Hidup Sehat) sebagai penunjang perekonomian UMKM ditengah pandemi Covid-19 di Jaten Karanganyar', *GANESHA: Jurnal Pengabdian Masyarakat*, 1(01). doi: 10.36728/ganesha.v1i01.1233.

World Health Organization (2021) *Coronavirus Disease (Covid-19) Pandemic*. World Health Organization (2006) *Health aspects of plumbing*. Geneva, <https://apps.who.int/iris/handle/10665/43423>.

World Health Organization (2018) *Guidelines on sanitation and health*. Geneva.

Yayi Suryo Prabandari (2020) *Buku Panduan Kampus Siaga Covid-19*.

Yu, I. T. S. et al. (2004) 'Evidence of Airborne Transmission of the Severe Acute Respiratory Syndrome Virus', *New England Journal of Medicine*, 350(17), pp. 1731-1739. doi: 10.1056/NEJMoa032867.