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Faktor Penyakit Komorbid dan Riwayat Kontak Erat terhadap Kejadian COVID-19 di Surabaya Selatan

Comorbid Diseases and History of Close Contact Factors of Covid-19 Incidence in South Surabaya

Jessie Angeline Nathasya[1]* Septa Ria Agina Perangin Angin[2], Fariani Syahrul[2], Ratna Dwi Wulandari[1]

[1]Department of Administration and Health Policy, Faculty of Public Health, Airlangga University, Surabaya, 60115, Indonesia
[2]Department of Epidemiology, Biostatistics, Population Studies and Health Promotion, Faculty of Public Health, Airlangga University, Surabaya, 60115, Indonesia

Article Info

***Correspondence:**
Jessie Angeline Nathasya
jessie.angeline.nathasya-2018@fkm.unair.ac.id

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ABSTRAK

Latar Belakang: *Penyakit komorbid merupakan faktor yang dapat memperburuk kondisi pasien COVID-19. Pasien terkonfirmasi COVID-19 dengan penyakit komorbid membutuhkan perawatan khusus, oleh karena itu perlu mendapat perawatan di rumah sakit. Tingkat penularan SARS COV-2 dari manusia ke manusia sangat cepat dan mudah. Kontak erat dengan kasus COVID-19 sangat mungkin terjadi penularan karena virus ini dapat dengan mudah menyebar melalui percikan tetesan air liur. Kasus dan tingkat kematian akibat Covid-19 terus meningkat seiring waktu. Pada 7 Maret 2021, proporsi kasus terkonfirmasi covid-19 tertinggi di Surabaya berada di Surabaya Selatan dan Surabaya Timur, proporsi yang dihasilkan sebesar 0,82%. Surabaya Selatan memiliki tingkat keparahan yang lebih tinggi dibandingkan Surabaya Timur (Angka kematian akibat COVID-19 = 6%).*
Tujuan: *Penelitian ini bertujuan untuk menganalisis besaran risiko faktor penyakit komorbid dan riwayat kontak erat terhadap kejadian COVID-19 di Surabaya Selatan. Manfaat penelitian ini adalah membantu pemerintah dalam membuat kebijakan penanganan lonjakan kasus COVID-19 di Surabaya Selatan.*
Metode: *Penelitian ini menggunakan jenis penelitian observasional analitik dengan desain cross sectional dan teknik sampling yang digunakan adalah participatory sampling. Jumlah sample dihitung dengan menggunakan rumus Murti (1997). Jumlah sample penelitian adalah 89. Analisis statistic menggunakan* Prevalence Ratio *(PR).*
Hasil: *Responden dengan hasil tes swab PCR negatif sebesar 60,7% dan hasil positif sebesar 39,3%. Responden dengan penyakit komorbid hanya sebanyak 17 responden dengan mayoritas memiliki hipertensi komorbid. Responden dengan riwayat kontak dekat adalah 71,9%. Penyakit komorbiditas memiliki risiko kejadian covid-19 di Surabaya Selatan dengan PR = 2,06 sedangkan riwayat kontak dekat, PR = 2,34.*
Kesimpulan: *Penyakit komorbid memiliki risiko sebesar 2,06 kali lipat dengan kejadian COVID-19 di Surabaya Selatan. Sedangkan untuk riwayat kontak erat memiliki risiko 2,34 kali lipat dengan kejadian COVID-19 di Surabaya Selatan. Riwayat kontak erat memiliki besaran risiko yang lebih tinggi terhadap kejadian COVID-19 di Surabaya Selatan. Pemerintah Kota Surabaya dapat memberikan perhatian khusus kepada masyarakat dengan penyakit komorbid dan meningkatkan tracing kontak erat penderita COVID-19.*

Kata kunci: *COVID-19, Penyakit Komorbid, Riwayat Kontak Erat*

ABSTRACT

Background: Comorbid diseases are one of the risk factors that can worsen the condition of COVID-19 patients. Patients with confirmed COVID-19 with comorbid diseases need special care, therefore, it is necessary to receive treatment in a hospital. The human-to-human transmission rate of SARS COV-2 is very fast and easy. Close contact with confirmed cases of COVID-19 is very possible for transmission to occur because this virus can be easily spread through droplet sparks. Cases and death rates from Covid-19 continue to grow over time. On March 7, 2021, the highest proportion of confirmed cases of covid-19 in Surabaya was in South Surabaya and East Surabaya, the resulting proportion was 0.82%. South Surabaya has a higher severity than East Surabaya (death rate from COVID-19 = 6%).
Objectives: This study aims to analyze the magnitude of risk factors for comorbid diseases and close contact history the incidence of COVID-19 in South Surabaya. The benefit of this research is to assist the government in making policies to handle the surge in COVID-19 cases in South Surabaya.
Methods: This study uses the type of observational analytical research with cross sectional design and sampling techniques used are participatory sampling. The number of samples is calculated using the formula Murti (1997). The sample size was 89. Statistical analysis used Prevalence Ratio (PR).
Results: Respondents with negative PCR swab test result is 60,7% and positive result is 39,3%. Respondent with comorbid disease only as many as 17 respondents with the majority having comorbid hypertension. Respondent with close contact history is 71,9%. Comorbid diseases have a risk of covid-19 incidence in South Surabaya with PR = 2.06 while close contact history, PR = 2.34.
Conclusions: Comorbid diseases have a risk of 2.06 times with the incidence of COVID-19 in South Surabaya. As for close contact history, it has a risk of 2.34 times with the incidence of COVID-19 in South Surabaya. The close contact history factor has a higher probability value in incidence of COVID-19 in South Surabaya. The Surabaya city government can pay special attention to people with comorbid diseases and increase tracing of close contacts with COVID-19 patients.

Keywords: *COVID-19, Comorbid Disease, Close Contact History*

INTRODUCTION

The COVID-19 pandemic has had a serious impact on all aspects of life. COVID-19 disease first appeared at the end of 2019 in Wuhan city, China. Covid-19 is the name of the disease caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). The average incubation period of this virus is 5-6 with the longest incubation period of 14 days. The characteristics of the host can be influenced by various factors of nutritional status, immunity (Hidayani, 2020). On March 11, 2020 WHO officially confirmed COVID-19 as a pandemic.

Symptoms commonly experienced by Covid-19 patients are fever, dry cough, dyspenia, weakness, and lymphopenia (Permatasari, Mawaddah and Amani, 2021). Severe symptoms are characterized by respiratory distress (respiratory rate ≥ 30 / min), oxygen saturation ≤ 93, and Arterial Partial pressure oxygen ≤ 300mmHg (Zhang *et al.*, 2020). Patients with confirmed cases of Covid-19 generally have mild symptoms and it is possible to recover without specific treatment in the sense of having a good prognosis. In certain patients, mild symptoms can develop into more severe symptoms such as severe pneumonia, pulmonary edema, acute respiratory distress syndrome (ARDS), various organ disorders and even death (Chen *et al.*, 2020).

MmacMahon, Pugh, and Ipsen (1960) and Susser (1973) suggest that there is a complex interaction between factors that play a role in causing disease. In line with this statement, each Covid-19 risk factor does have a complex interaction between one factor and another. High mortality rates tend to be in patients who have comorbid / concomitant diseases such as hypertension, diabetes mellitus, heart, kidney, and others (Rumana *et al.*, 2022). In covid-19 patients who died, as many as 10.1% were patients with diabetes comorbidities. While in hypertension is 9.8%. this figure makes diabetes and hypertension the two highest comorbidities in covid-19 patients who died (Satgas Covid-19, 2021). Research conducted by (Guan et al, 2020) reported that 25.1% of respondents studied had at least one comorbid disease and 8.2% reported having two or more comorbid diseases. Comorbid diseases are one of the risk factors that can worsen the condition of

COVID-19 patients. Patients with confirmed COVID-19 with comorbid diseases need special care, therefore, it is necessary to receive treatment in a hospital (Kementerian Kesehatan RI, 2020).

The human-to-human transmission rate of SARS COV-2 is very fast and easy. This Virus can transmit through droplets when someone talks, coughs, or sneezes and is able to survive for a long time on an object (Susilo *et al.*, 2021). Close contact with confirmed cases of COVID-19 is very possible for transmission to occur because this virus can be easily spread through droplet sparks (Kementerian Kesehatan RI, 2020). There are 9 reported cases of direct human-to-human transmission outside of China from index cases to people with close contacts who have not traveled anywhere (Handayani *et al.*, 2020).

Cases and death rates from Covid-19 continue to grow over time. WHO has confirmed that there are 235 countries affected by COVID-19 with confirmed cases reaching 40,665,438 with deaths of 1,121,843 (WHO, 2020). On 23 October 2020 globally confirmed cases reached 41,104,946, cases died by 1,128,325 with a mortality rate of 2.7% and a Global risk that is still very high. In the Southeast Asian area there were 8,679,128 confirmed cases with deaths reaching 137,068 (1.6%). On 2 March 2020 Indonesia had its first Covid-19 case and since then confirmed cases of Covid-19 have continued to increase. On May 21, 2020, Indonesia reached 1000 Covid-19 cases per day and there were 821 deaths in May. East Java Covid-19 Task Force (2020) reported that East Java is one of the provinces in Indonesia affected by the COVID-19 pandemic with moderate to low risk, but still there are additional cases every day. Although East Java is a medium to low risk, East Java is reported to have 50,069 confirmed cases of Covid-19 and 3,619 cases died from Covid-19. The largest contributor of Covid-19 cases in East Java is the city of Surabaya which is t also often a red zone. On March 7, 2021, the highest proportion of confirmed cases of covid-19 in Surabaya was in the South Surabaya and East Surabaya, the resulting proportion was 0.82%. South Surabaya has a higher severity level than East Surabaya because the death rate due to COVID-19 in South Surabaya reached 6% (Satgas Covid-19, 2021).

This study was conducted to analyze the magnitude of the risk of comorbid diseases and the history of close contact with the incidence of COVID-19 in South Surabaya. The benefit of this study is to assist the government in making policies to handle the surge in COVID-19 cases in South Surabaya.

METHOD

Based on the type of research, this research is an analytical observational study because this research aims to solve the problem without providing treatment or intervention to the research sample. The study design used is cross-sectional because this study conducted data observation only once at a time (Notoatmodjo, 2002). The independent variable of the study was comorbid diseases and close contact history while the dependent variable of the study was the incidence of COVID-19 in South Surabaya. The population of this research was all patients who did COVID-19 PCR swab test from February to April 2021 in South Surabaya. The sample was calculated by Murti theory (1997), the number of samples was 89 respondents with inclusion criteria are domiciled in South Surabaya, aged more than 28 years, and willing to be a research respondent and the exclusion criteria are swab test results derived from antigen tests

Primary data collection of the study was carried out in May 2021. The data set uses an online questionnaire. The data already collected will be univariate analysis and bivariate analysis. Univariate analysis presents a table of frequency data while bivariate analysis measures the amount of risk of the independent variable to the dependent variable by using the calculation of Prevelance Ratio (PR). Statistical analysis was performed using IBM SPSS Software. This research has passed the ethical assessment and obtained a certificate of ethics from the Faculty of Dentistry, Universitas Airlangga with number 188/HRECC.FODM /IV/ 2021.

RESULT AND DISCUSSION

Incidence of COVID-19

The frequency distribution of COVID-19 incidence in South Surabaya is divided into two categories of respondents based on the PCR swab test results obtained, namely positive COVID-19 and negative COVID-19.

Table 1. Distribution of Respondents Based on PCR Test Swab Results in The South Surabaya in 2021

PCR Swab Test Result	Frequency	Percentage (%)
Positive	35	39,3
Negative	54	60,7
Total	**89**	**100**

Based on the table 1, the majority of respondents received negative PCR swab test results of 60.7%, while respondents who were confirmed positive for COVID-19 were 39.3%.

Comorbid Disease

In this study, the results showed that the majority of respondents did not have comorbid diseases, only 17 respondents had comorbid diseases. The types of comorbid diseases owned by 17 respondents can be seen in the following table

(percentage to the number of samples).

Based on the table 2, it can be seen that from the 17 respondents had comorbid hypertension with a percentage of 52.9%, while respondents who had comorbid Diabetes mellitus and asthma were 11.8%. Respondents who had GERD comorbid disease amounted to 5.9%. In addition, there were 11.8% of respondents who had two comorbid diseases, namely hypertension and diabetes mellitus. Meanwhile, respondents who have three comorbid diseases, namely hypertension, diabetes mellitus, and coronary heart disease by 5.9%.

Table 2. Distribution of Respondent Comorbid Diseases in The South Surabaya in 2021

Comorbid Disease	Frequency	Percentage (%)
Hypertension	9	52,9
Diabetes Mellitus	2	11,8
Hypertension and Diabetes Mellitus	2	11,8
Asthma	2	11,8
GERD	1	5,9
Hypertension, Diabetes Mellitus and Coronary Heart Disease	1	5,9
Total	**17**	**100**

History of Close Contact

Table 3. Distribution of Respondents' Close Contact History with Confirmed Cases of COVID - 19 in South Surabaya in 2021

Close Contact History	Frequency	Percentage (%)
Yes	64	71,9
No	25	28,1
Total	**89**	**100**

Table 4. Scope of Close Contact History of Respondents in The South Surabaya in 2021

Scope of Close Contact History	Frequency	Percentage (%)
Family	44	66,7
Friends	7	10,6
Work Place	12	18,2
Neighbors	3	4,5

The frequency distribution of close contact history is divided into two categories of respondents, namely respondents with a history of close contact and respondents who do not have a history of close contact. Based on the table 3, it can be seen that the majority of respondents have a history of close contact with confirmed cases of COVID-19 with a percentage of 71.9%, while respondents who do not have a history of close contact have a percentage of 28.1%. On the table 4 it can be seen that the majority of respondents who have a history of close contact comes from the family of 66.7%.

The Amount of Risk of Comorbid Diseases with The Incidence of COVID-19 in South Surabaya

The results showed that respondents who were positive for COVID-19 amounted to 66.7% of respondents had comorbid diseases, while respondents with a negative COVID-19 status of 33.3% had comorbid diseases.

The results of the analysis showed that comorbid disease variables have a PR of 2.06 which means that someone who has a comorbid disease has a 2.06 times greater chance of experiencing a COVID-19 incidence than respondents who do not have a comorbid disease.

Comorbid diseases are always associated with the incidence of COVID-19 and are always controlled so as not to worsen the patient's condition. This comorbid disease is very vulnerable to COVID-19 infection because it can cause decreased immunity from patients than patients who do not have comorbid diseases. Among the comorbid diseases that have the most incidence of COVID-19 are hypertension and diabetes mellitus (Vani *et al.*, 2022). Research conducted by (Huang *et al.*, 2020) showed that as many as 41 patients who had been confirmed positive for COVID-19 were declared 13 patients including having comorbid diseases. Research conducted in the United States showed that of the respondents who confirmed COVID-19, 1,200 had a cancer diagnosis and significantly 16,570 patients increased their risk of COVID-19 infection (Wang, Berger and Xu, 2021).

One study conducted at Wisma Atlet Jakarta showed that there is a risk between diabetes mellitus with the incidence of covid-19 with an OR value of 16.5 and hypertension at risk with the incidence of covid- 19 with an OR value of 2.67 (Rifiana and Suharyanto, 2020). In a study conducted by (Rumana *et al.*, 2022), it was found that there was a relationship between comorbid hypertension disease and the incidence of COVID-19 with an OR value of 2.19, meaning that someone who has comorbid hypertension has a positive tendency for COVID-19 by 2.19 times greater than someone who does not have comorbid hypertension. Research conducted in Metropolitan Detroit showed that of the 435 patients studied, 94% had at least 1 comorbidity, including hypertension 63.7%, chronic kidney disease 39.3%, and diabetes 38.4% (Suleyman *et al.*, 2020). In this study also showed that the most comorbid experienced by respondents is hypertension.

Table 5. Cross Tabulation of The Risk of Comorbid Diseases with The Incidence of COVID-19 in South Surabaya in 2021

Comorbid Disease	Insidence of COVID-19				Total		PR
	Yes		No				
	n	%	n	%	N	%	
Yes	12	66,7	6	33,3	18	100	2,06
No	23	32,4	48	67,6	71	100	

The Amount of Risk of Close Contact History with The Incidence of COVID-19 in South Surabaya

The results showed that respondents who experienced positive confirmation of COVID-19 by 46.9% had a history of close contact with positive confirmation patients, while respondents with negative COVID-19 by 53.1% had a history of close contact with positive confirmation patients.

The results of the analysis showed that the variable close contact history has a PR of 2.34 which means that someone who has a history of close contact has a 2.34 times greater chance of experiencing a COVID-19 incident than respondents who do not have a history of close contact.

Close contact is identified as a cause for someone to be infected with COVID-19 and is one of the patient criteria in the implementation of tracing. SARS-CoV-2 has been confirmed to be transmissible from person to person when the infected person is in close proximity (close contact) with other people (WHO, 2020). In The Study of (Elviani, 2020) shows that there is a risk between close contact with COVID-19 (OR=1.61095) which means that people with a history of close contact have a chance to experience a COVID-19 incidence 1.6 times greater than people without a history of close contact. The study is in line with research conducted (Nurfalah *et al.*, 2021) showed that close contact is a risk factor for COVID-19 incidents with an OR value of 188.5 meaning that close contact has a risk of 188.5 times the incidence of COVID-19. Research conducted in Wajo Regency showed that 44.2% of people confirmed positive were patients with previous close contact history (Duhri, Jabbar and Yunus, 2020). The Centers for Disease Control and Prevention (CDC) cited in the Journal Coronavirus Disease 2019: Review of Current literature, 2020 stated that, contact history is one of the risk factors for COVID-19 incidents because this virus can be easily transmitted from human to human (Susilo *et al.*, 2021).

In this study the prevalence ratio of comorbid disease factors and close contact history is based on the results of the PCR swab test so that the measurement of the incidence of covid-19 is more accurate. However, this study did not analyze the prevalence ratio per category of comorbid diseases and per scope of close contact history.

Table 6. Cross Tabulation of The Risk of Close Contact History with the COVID-19 Incident in The South Surabaya in 2021

Close Contact History	Insidence of COVID-19				Total		PR
	Yes		No				
	n	%	n	%	N	%	
Yes	30	46,9	6	53,1	64	100	2,34
No	5	20	48	80	25	100	

CONCLUSION

Comorbid diseases have a risk of 2.06 times with the incidence of COVID-19 in South Surabaya. The suggestion for Surabaya city government are make a special appeal to people who have comorbid diseases to maintain health protocols and provide education about people with comorbid diseases are more susceptible to COVID-19. As for the history of close contact, it has a risk of 2.34 times with the incidence of COVID-19 in South Surabaya. The history of close contact factor has a higher probability value, allowing the highest incidence of covid to be caused by close contact with other people. The Surabaya city government must strengthen tracing and at least close contact needs to do self-isolation also until the incubation period is over.

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REFERENCES

Chen, N. *et al.* (2020) 'Epidemiological and Clinical Characteristics of 99 cases of 2019 novel coronaviruse pneumonia in Wuhan, China: A Descriptive study', *Lancet*, 395(10223), pp. 507–513. Available at: https://doi.org/10.1016/S0140-6736(20)30211-7.

Duhri, A.P., Jabbar, R. and Yunus, N. (2020) 'Karakteristik Pasien Konfirmasi Covid-19 Di RSUD Lamaddukkelleng Kabupaten Wajo (Tinjauan Pasien Periode Maret-September 2020)', *Media Kesehatan Politeknik Kesehatan Makassar*, 15(2), pp. 319–326. Available at: https://doi.org/10.32382/medkes.v15i2.1789.

Elviani, R. (2020) *Analisis Determinan Insiden Covid-19 Pada Pasien Di Ruang Rawat Isolasi Rsup Dr. M. Hoesin Palembang Periode 1 Maret 2020-31 Juli 2020*. Sriwijaya University.

Handayani, D. *et al.* (2020) 'Corona Virus Disease 2019', *Jurnal Respirologi Indonesia*, 40(2), pp. 119–129. Available at: https://doi.org/10.36497/jri.v40i2.101.

Hidayani, W.R. (2020) 'Faktor Faktor Risiko Yang Berhubungan Dengan COVID 19 : Literature Review', *Jurnal untuk Masyarakat Sehat (JUKMAS)*, 4(2), pp. 120–134. Available at: https://doi.org/https://doi.org/10.52643/jukmas.v4i2.1015.

Huang, C. *et al.* (2020) 'Clinical Features of Patients Infected with 2019 Novel Coronavirus in Wuhan, China', *Lancet*, 395(10223), pp. 497–506. Available at: https://doi.org/10.1016/S0140-6736(20)30183-5.

Kementerian Kesehatan RI (2020) 'Pedoman Pencegahan dan Pengendalian CORONAVIRUS DISEASE (COVID-19) Revisi ke-5.'

Notoatmodjo (2002) *Metode Penelitian Kesehatan*. Jakarta: PT Rineka Cipta.

Nurfalah, W. *et al.* (2021) 'Faktor Risiko Kejadian Covid-19 Pada Pasien di RSUD Sayang Rakyat Kota Makassar', *Window of Public Health Journal*, 2(4), pp. 1487 – 1497. Available at: https://jurnal.fkm.umi.ac.id/index.php/woph/article/view/319.

Permatasari, N.N.P., Mawaddah, M. and Amani, Z.A. (2021) 'Review Artikel: Faktor Risiko Pasien Terinfeksi Covid-19 dan Metode Pencegahannya', *Farmaka*, 19(1), pp. 15–25. Available at: https://doi.org/10.24198/farmaka.v19i1.27203.g16012.

Rifiana, A.J. and Suharyanto, T. (2020) 'Faktor risiko Diabetes Mellitus Dan Hipertensi Dengan Kejadian Corona Virus Deases-19 (Covid-19) Di Wisma Atlit Tahun 2020', *Jurnal Penelitian*, 19(1), p. 19.

Rumana, N.A. *et al.* (2022) 'Risiko Terinfeksi Covid 19 pada Pasien dengan Komorbid Diabetes Melitus dan Hipertensi di Rumah Sakit Mekar Sari Kota Bekasi', *Journal of Hospital Management*, 5(1), pp. 1–8. Available at: https://ejurnal.esaunggul.ac.id/index.php/johm/article/view/5363.

Satgas Covid-19 (2021) *Peta Sebaran Covid 19*. Available at: https://covid19.go.id/peta-sebaran.

Suleyman, G. *et al.* (2020) 'Clinical Characteristics and Morbidity Associated With Coronavirus Disease 2019 in a Series of Patients in Metropolitan Detroit', *JAMA Network Open*, 3(6), pp. 1–12. Available at: https://doi.org/10.1001/jamanetworkopen.2020.12270.

Susilo, A. *et al.* (2021) 'Coronavirus Disease 2019: Tinjauan Literatur Terkini', *Jurnal Penyakit Dalam Indonesia*, 7(1), p. 45. Available at: https://doi.org/10.7454/jpdi.v7i1.415.

Vani, A.T. *et al.* (2022) 'Prevalensi Pasien COVID-19 dengan Penyakit Komorbid di Semen Padang Hospital Tahun 2020', *Nusantara Hasana Journal*, 1(11), pp. 47–58.

Wang, Q., Berger, N.A. and Xu, R. (2021) 'Analysis of Risk, Racial Disparity, and Outcomes among US Patients with Cancer and COVID-19 Infection', *JAMA Oncology*, 7(2), pp. 220–227. Available at: https://doi.org/10.1001/jamaoncol.2020.6178.

WHO (2020) 'Penggunaan Masker Dalam Konteks COVID-19', pp. 1–16.

Zhang, J.-J. *et al.* (2020) 'Clinical Characteristics of 140 patients infected with SARSCoV-2 in Wuhan China', *Wiley Library Journal*, 75(7), pp. 1730–1741. Available at: https://doi.org/10.1111/all.14238.