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Research Article

The Efficacy of Using Cloth, Surgical, KN95, N95 and Full-face Masks among Indonesian's Travellers in COVID-19 Era

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ABSTRACT

Background: The Effectiveness of Masks to Prevent COVID-19. During the Corona pandemic, masks became a very vital tool to prevent the spread of COVID-19. With the importance of using masks to prevent this Coronavirus, few circulate are circulating on the market. Like the cheapest and many people use is a cloth mask. However, many travelers are still confused about wearing so many variants that sell in the market nowadays.

Aim: To know the best cover to reduce the probability of COVID 19 accidents among travelers in Indonesia.

Methods: The travelers in Indonesia were asked by questionnaire about the mask chosen, symptoms, and the rapid test value.

Result: 70.2% of Indonesian travellers without COVID 19 symptoms still use medical masks to prevent contracting the CoV2 virus.

Conclusion: Medical covers are even suitable for use as a means of personal protection for travelers who want to travel. Apart from being cheap, these masks are readily available in many shopping centres and are comfortable to wear while traveling.

Keywords: Travellers; COVID-19; Mask; Respiratory mask; Surgical mask

INTRODUCTION

The use of masks is part of a comprehensive series of prevention and control measures that can limit the spread of certain respiratory viral diseases, including COVID-19. Veneers can be used to protect a healthy person (worn to protect oneself in contact with an infected person) or to control sources (worn by an infected person to prevent further transmission). This mask is certainly not an exaggeration when used by travellers. However, the use of shows alone is insufficient to provide an adequate level of protection or source control. Therefore, other measures at the individual and community level also need to be adopted to reduce respiratory viruses, especially for travellers. Whether a mask is used or not, adherence to hand hygiene, physical distancing, and other infection control (PPI) measures are essential to prevent the transmission of COVID-19 between travelers. This study provides information and guidance regarding masks in health services for the general public and when traveling. The World Health Organization (WHO) has developed specific guidelines on IPC strategies in health care [1], long-term care facilities (FPJP) [2], and home care [3].

Transmission of COVID-19 while traveling

The spread of the COVID-19 virus is increasingly being understood every day. The main characteristic of COVID-19 is respiratory tract disease, and the spectrum of this viral infection ranges from people experiencing very mild non-respiratory symptoms to severe acute respiratory illness, sepsis with organ dysfunction, and death. Some infected people report no symptoms at all.

According to current evidence, the spread of the COVID-19 virus occurs mainly between people via the droplet route (splashes) from the respiratory tract and contact. Droplet transmission occurs when a person is in close contact (within 1 meter) with an infected person, and there is exposure to respiratory droplets that may be infected, for example, through coughing, sneezing, or very close contact with the person so that the infectious agent enters through these points. Such as the mouth, nose, or conjunctiva (eyes) [4-9]. Spread can also occur through forms in the immediate environment of an infected person. [10,11].

Therefore, the spread of the COVID-19 virus can occur directly through contact with people infected or indirectly through contact with direct environmental surfaces or objects used for or by an infected person (for example, a stethoscope or thermometer).

In situations where aerosol-generating procedures are carried out, airborne (through the air) spread of the COVID-19 virus may occur.

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The scientific community discusses whether the COVID-19 virus can also spread through aerosols without an Aerosol-Generating Procedure (AGP).

AGP is still actively researched. So far, some studies have found viral RNA in air samples from clinical facilities where AGP has not been carried out [12-14], but other reviews have not [10,11,15]. However, the presence of viral RNA is not the same as a reproducible and infectious virus that can spread and inoculate sufficiently to cause an invasive infection. A small number of experimental studies conducted in aerobiology laboratories found viral RNA [16] and viable virus [17].

Current evidence indicates that most of the transmission of COVID-19 occurs from symptomatic persons/symptoms to others through close contact when not wearing the proper PPE. In symptomatic/symptomatic patients, viral RNA can be detected in the sample several weeks after the onset of the disease. Still, in mild patients, the live virus is not detected after the 8th day of the start of symptoms [18,19], although this period may be longer for patients. The seriously ill. However, a more prolonged RNA shedding does not necessarily mean continued infectious nature. The transmissibility of this virus depends on the amount of live virus a person sheds, regardless of whether the person coughs and expels droplets, the types of contact they have with other people, and the PPI measures followed.

Research on transmission must be interpreted in light of the context in which communication occurs. It is possible for the news to emerge from an infected person and shed the virus but do not have symptoms; this transmission is called presymptomatic communication. The incubation period for COVID-19, which is the time between exposure to the virus and the appearance of symptoms, averages 5-6 days but can be up to 14 days [20,21]. Additionally, data shows that some people test positive for COVID-19. Through a Polymerase Chain Reaction (PCR) test 1-3 days before showing symptoms [22]. Presymptomatic transmission is defined as the transmission of the COVID-19 virus from an infected person and sheds the virus but has not experienced symptoms. Symptomatic people have a higher Viral Load (VL) right on or before the onset of symptoms than later during infection [23].

Some people infected with the COVID-19 virus have no symptoms at all, although they can shed the virus, which can then be spread to others. Recently a systematic review found that the proportion of asymptomatic cases ranged from 6% to 41% and gave a combined estimate of 16% (12%-20%) [24]. For the most part, there are significant limitations on studies that this study includes inadequate reporting of symptoms or the absence of sufficient restrictions on the signs studied.

The live virus has been isolated from specimens of presymptomatic and asymptomatic people, indicating that asymptomatic people can spread the virus to others [25]. Thorough studies of transmission from asymptomatic persons are difficult. Still, available evidence from contact tracing reported by the Member States indicates that infected but asymptomatic persons are much less likely to transmit the virus than persons with symptoms.

Among the published studies, some describe the incidence of transmission from asymptomatic people. [20,24-31] For example, among infected but asymptomatic people studied in China, evidence suggests that 9(14%) [31] Furthermore, one of the two rigorous studies examining secondary case-to-contact transmission found no secondary information in 91 out of 9 asymptomatic cases [32]. In comparison, another study reported 6.4% of patients were associated with secondary details—presymptomatic message [33].

The data available to date regarding persistent infection from asymptomatic cases come from a small number of studies with a small sample size that may be memory biased. Moreover, the possibility of transmission of promise could not be ruled out in these studies.

Use of medical masks and respirators for travellers

This section provides evidence-based and consensus-based guidance on using medical masks and respirators by travelers wishing to travel somewhere. Medical masks are defined as surgical or procedure masks that are flat or have creases; this type of cover is fastened to the head with a strap around the ears or director or both. Its performance characteristics are tested according to a series of standardized test methods (ASTM F2100, EN 14683, or equivalent) that aim to balance high filtration, adequate breathability, and (optionally) fluid penetration resistance. [33,34].

A Filtering Facepiece Respirator (FFR), or a respirator, also provides a balance of filtration and breathability; however, a respirator filtered 0.075 micrometer-sized solid particles, compared to a medical mask that filtered 3-micrometer droplets. European FFR, according to EN 149 standard, with FFP2 performance filters out at least 94% of solid NaCl particles and oil droplets, and US N95 FFR, according to NIOSH 42 CFR Part 84, filters at least 95% of NaCl particles. The certified FFR also ensures unobstructed breathing with maximum inhalation and exhalation resistance. Another critical difference is how the filtration is tested; the medical mask filtration test is carried out on a mask's cross-section. The FFR is tested for the whole surface filtration. Therefore, compared to the medical show's concave shape or leaky structure, the layers of the filtration material and the FFR shape that ensure the outer edges of the FFR seal tightly against the user's face guarantee the filtration as claimed when worn. Other requirements for FFR performance include not exceeding specific parameters for CO2 accumulation, total inward leakage, and rope tension strength [35-37]. Evidence is available in the WHO Guidelines regarding the types of respiratory protection that travellers should use.

METHODS

The research method used an online survey of 146 respondents in various multicenter health services in Indonesia. With some specific questions about COVID-19, here the questionnaire: (Table 1).

Table 1: Questionnaires about traveler's masks that used in covid-19 era.

No	Questions	Answers	
1	Have you contacted a COVID-19 positive patient or in the same room or connection within 1 meter in the last 14 days?	Yes	No
2	Have you been to or lived in a country or area where COVID-19 is endemic in the past 14 days?	Yes	No
3	Have you had a fever (body temperature over 38 degrees Celsius) or a history of fever or acute respiratory infection in the last 14 days?	Yes	No
4	Have you had a cough in the last 14 days?	Yes	No
5	Have you had a cold in the last 14 days?	Yes	No
6	Have you had shortness of breath in the last 14 days?	Yes	No
7	Have you had diarrhea in the last 14 days?	Yes	No
8	Have you ever had a positive rapid test for Covid 19, either IgM or IgG?	Yes	No

RESULTS AND DISCUSSION

Respondents who participated in this survey were 65.2% male and 34.8% female. With 85.1% of respondents aged 18-50 years. 10.6% are aged 5-17 years, and the rest are over 50 years old. With various work backgrounds from medical personnel, traders, private workers, TNI, students, and others of the 147 travellers in Indonesia without any symptoms of COVID 19, the results of the masks used while traveling were as follows: 70.2% used medical masks, 14.9% used KN95 masks, 8.5% used cloth masks, 4.2% used full face masks, and only 2.2% used masks fabric (Figure 1).

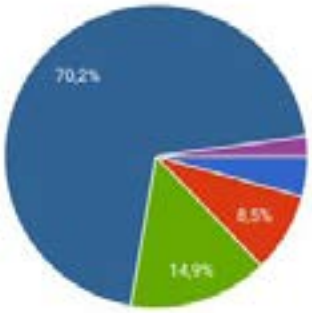

Figure 1: Presentation of mask users among travelers in Indonesia

The use of medical masks is felt to be more comfortable, safe, and easy to buy by people who want to travel at the nearest minimarket at a reasonably low price. KN95, N95, and full-face masks are felt to be more challenging to buy, and the price is relatively high to make travelers choose to use medical masks. Even though full face masks are safer, they tend to be abandoned because they are less comfortable to use when traveling, and the prices are less friendly. Many cloth masks tend to be submitted because many COVID 19 have occurred among cloth mask users.

CONCLUSION

The author advises that travelers use at least surgical masks, N95, or KN95 to avoid contracting COVID-19 in addition to continuing to apply the unique COVID-19 health protocol.

Researchers considered all available evidence regarding the modes of transmission of the COVID-19 virus and regarding the use of masks or respirators to protect travelers from infection, the confidence of this evidence, and the possible benefits and drawbacks, such as skin lesions, irritant dermatitis, or worsening acne. Or breathing difficulties that are more common when using a respirator. Full-face masks are still minimal for people with good purchasing power and with high intensity in traveling.

Researchers also considered the implications of maintaining or modifying existing recommendations regarding the availability of medical masks or respirators, costs, and impact on procurement, compliance, and equitable access for health workers to these respiratory protective devices worldwide. The GDG recognizes that, in general, healthcare professionals far prefer the tools that are most seen as preventing COVID-19 infection and are, therefore, prioritizing the potential benefits of respirators in places without AGP. However, some studies have shown that medical masks are equally effective and detached. From weak evidence from other studies indicating respirators further reduce the risk of COVID-19 infection. The authors also give massages for all the travelers to read doa that Prophet Muhammad SAW tells us.

If someone comes out of the traditional house, then he reads the prayer above, then it is conveyed to him: 'You are given directions, you are provided for, and you are protected. Instantly the demons moved away. Then one demon involving information. How could you possibly interfere with someone who has been guided, provided, and protected? "(Narrated by Abu Daud 5095, Turmudzi 3426, and al-Albani declared)".

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REFERENCES

1. Infection prevention and control during health care when COVID-19 is suspected: interim guidance. Geneva: World Health Organization; 2020.
2. Faridi S, Niazi S, Sadeghi K, Gaddafi K, Bavarian J, Shamsipour M, et al. A field indoor air measurement of SARS-CoV-2 in the patient rooms of the largest hospital in Iran. Sci Total Environ.2020;725:138401.
3. Van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. N Engl J Med. 2020;382(16):1564-1567.
4. Fears A, Klimstra W, Duplex P, Hartman A, Weaver C, Plante KS, et al. Comparative dynamic aerosol efficiencies of three emergent coronaviruses and the unusual persistence of SARS-CoV-2 in aerosol suspensions. MedRxiv.
5. Symptom-Based Strategy to Discontinue Isolation for Persons with COVID-19. Atlanta: Centers for Disease Control and Prevention.
6. Wolfel R, Corman VM, Guggemos W, Seilmaier M, Zange S, Muller MA, et al. Virological assessment of hospitalized patients with COVID-2019. Nature. 2020;581(7809):465-469.
7. Yu P, Zhu J, Zhang Z, Han Y. A Familial Cluster of Infection Associated With the 2019 Novel Coronavirus Indicating Possible Person-to-Person Transmission During the Incubation Period. J Infect Dis.2020;221(11):1757-1761.
8. Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. Ann Intern Med. 2020;172(9):577-582.
9. Kimball A, Hatfield KM, Arons M, James A, Taylor J, Spicer K, et al. Asymptomatic and Presymptomatic SARS-CoV-2 Infections in Residents of a Long-Term Care Skilled Nursing Facility - King County, Washington, Maret 2020. MMWR Morb Mortal Wkly Rep. 2020;69(13):377-381.
10. He X, Lau EHY, Wu P, Deng X, Wang J, Hao X, et al. Temporal dynamics in viral shedding and transmissibility of COVID-19. Nat Med. 2020;26(5):672-675.
11. Byambasuren O, Cardona M, Bell K, Clark J, McLaws M.-L, Glasziou P. Estimating the extent of true asymptomatic COVID-19 and its potential for community transmission: systematic review and meta-analysis. Infectious Diseases (except HIV/AIDS). MedRxiv. 2020.
12. Infection prevention and control for long-term care facilities in the context of COVID-19: interim guidance. Janeway: World Health Organization; 2020.

13. Home care for patients with COVID-19 presenting with mild symptoms and contacts management: interim guidance. Janeway: World Health Organization; 2020.

14. Liu J, Liao X, Qian S, Yuan J, Wang F, Liu Y, et al. Community Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, Shenzhen, China, 2020. Emerg Infect Dis. 2020;26(6):1320-1323.

15. Chan JF, Yuan S, Kok KH, To KK, Chu H, Yang J, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. Lancet. 2020;395(10223):514- 523.

16. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. N Engl J Med. 2020;382(13):1199-1207.

17. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;395(10223):497-506.

18. Burke RM, Midgley CM, Dratch A, Fenstersheib M, Haupt T, Holshue M, et al. Active Monitoring of Persons Exposed to Patients with Confirmed COVID-19 United States, January-February 2020. MMWR Morb Mortal Wkly Rep. 2020;69(9):245-246.

19. Coronavirus disease 2019 (COVID-19) Situation Report–73. Janeway: World Health Organization; 2020.

20. Cheng VCC, Wong SC, Chen JHK, Yip CCY, Chuang VWM, Tsang OTY, et al. Escalating infection control response to the rapidly evolving epidemiology of the coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong. Infect Control Hosp Epidemiol. 2020;41(5):493-498.

21. Ong SWX, Tan YK, Chia PY, Lee TH, Ng OT, Wong MSY, et al. Air, Surface Environmental, and Personal Protective Equipment Contamination by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) From a Symptomatic Patient. JAMA. 2020;323(16):610.

22. Guo ZD, Wang ZY, Zhang SF, Li X, Li L, Li C, et al. Aerosol and Surface Distribution of Severe Acute Respiratory Syndrome Coronavirus 2 in Hospital Wards, Wuhan, China, 2020. Emerg Infect Dis. 2020;26(7)1583-1591.

23. Chia PY, Coleman KK, Tan YK, Ong SWX, Gum M, Lau SK, et al. Detection of air and surface contamination by SARS-CoV-2 in hospital rooms of infected patients. Nat Commun. 2020;11(1):2800.

24. Arons MM, Hatfield KM, Reddy SC, Kimball A, James A, Jacobs JR, et al. Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility. N Engl J Med. 2020;382(22):2081-2090.

25. Luo L, Liu D, Liao X, Wu X, Jin Q, Zheng J, et al. Modes of contact and risk of transmission in COVID-19 among close contacts. MedRxiv. 2020

26. Hu Z, Song C, Xu C, Jin G, Chen Y, Xu X, et al. Clinical characteristics of 24 asymptomatic infections with COVID-19 screened among close contacts in Nanjing, China. Sci China Life Sci. 2020;63(5):706-711.

27. Huang R, Xia J, Chen Y, Shan C, Wu C. A family cluster of SARS-CoV-2 infection involving 11 patients in Nanjing, China. Lancet Infect Dis. 2020;20(5):534-535.

28. Pan X, Chen D, Xia Y, Wu X, Li T, Ou X, et al. Asymptomatic cases in a family cluster with SARS-CoV-2 infection. Lancet Infect Dis. 2020;20(4):410-411.

29. Wang Y, Tong J, Qin Y, Xie T, Li J, Li J, et al. Characterization of an asymptomatic cohort of SARS-COV- 2 infected individuals outside of Wuhan, China. Clin Infect Dis. 2020;71(16):2132-2138.

30. Wei WE, Li Z, Chiew CJ, Yong SE, Toh MP, Lee VJ. Presymptomatic Transmission of SARS-CoV-2 -Singapore, January 23-March 16, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(14):411-415.

31. Cheng HY, Jian SW, Liu DP, Ng TC, Huang WT, Lin HH, et al. Contact Tracing Assessment of COVID-19 Transmission Dynamics in Taiwan and Risk at Different Exposure Periods Before and After Symptom Onset. JAMA Intern, Med. 2020;180(9):1156.

32. European Standards. UNE EN14683:2019+AC:2019. Medical Face Masks -Requirements and Test Methods. 2019.

33. F23 Committee, n.d. Specification for Performance of Materials Used in Medical Face Masks. ASTM International. 2020.

34. National Institute for Occupational Safety and Health (NIOSH). NIOSH Guide to the Selection and Use of Particulate Respirators. Health and Human Services (DHHS). 1996;96- 101.

35. CEN, E., 2001. 149: 2001 norm: Respiratory protective devices-Filtering half masks to protect against particles-Requirements, testing, marking. European Committee for Standardization.

36. Long Y, Hu T, Liu L, Chen R, Guo Q, Yang L, et al. Effectiveness of N95 respirators versus surgical masks against influenza: A systematic review and meta-analysis. J Evid Based Med. 2020;13(2):93-101.

37. Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. N Engl J Med. 2020;382(16):1564-1567.