JURNAL BIOMETRIKA DAN KEPENDUDUKAN

(Journal of Biometrics and Population)

ANALYSIS OF THE INFLUENCE OF PERSONAL SAFETY PRACTICES, ORGANIZATION AND RESPONSES PERCEIVED BY HEALTH WORKERS ON HOW TO MANAGE THE RISK OF COVID-19

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Published by *Fakultas Kesehatan Masyarakat Universitas Airlangga*

Keywords:
practice,
safety,
health workers,
handling,
COVID-19

ABSTRACT

In response to the COVID-19 pandemic, healthcare workers were required to implement safety practices to protect themselves from high transmission risks. The aim of this study is to analyze the influence of personal safety practices, organizational practices, and perceived responses by healthcare workers on how they manage COVID-19 risks. This study is an analytical research using a cross-sectional method. The research instrument used was an online questionnaire distributed in June 2022. The inclusion criteria were healthcare workers serving as frontliners at Community Health Centers (*Puskesmas*) and Government or Teaching Hospitals in Surabaya City, with a minimum of three months of work experience during the pandemic (2020–2021). A total of 221 respondents participated in the study. The data were analyzed using multiple regression tests to examine the effect of independent variables (perceptions of personal safety practices, organizational practices, and perceived responses related to COVID-19) on the dependent variable (ways of managing COVID-19 risks). The majority of respondents were female (85.5%); 76.5% were married; 88.7% worked at *Puskesmas*, with 48.4% of them being accredited with full status, and 11.3% worked at hospitals, with 8.1% of those hospitals also fully accredited. This study found that personal safety practices (p = 0.000) and perceived responses (p = 0.025) had a significant effect on how healthcare workers managed COVID-19 risks. Meanwhile, organizational safety practices did not significantly affect risk management. Healthcare facilities need to provide safety training and psychosocial support to enhance healthcare workers' preparedness and resilience during crises.

***Kata Kunci**:*
praktik,
keselamatan,
tenaga kesehatan,
penanganan,
COVID-19

ABSTRAK

Sebagai respons terhadap pandemi COVID-19, tenaga kesehatan diwajibkan menerapkan praktik-praktik keselamatan untuk melindungi diri mereka dari risiko tinggi penularan. Tujuan penelitian ini yaitu menganalisis pengaruh antara praktik keselamatan pribadi, organisasi dan respon yang dirasakan tenaga kesehatan terhadap cara menangani risiko COVID-19. Penelitian ini merupakan penelitian analitik dengan metode cross sectional. Instrumen penelitian menggunakan kuesioner online yang disebar pada bulan Juni 2022. Kriteria inklusi responden petugas kesehatan yang bekerja sebagai frontliner di Puskesmas dan Rumah Sakit (RS) Pemerintah atau RS Pendidikan di Kota Surabaya dengan pengalaman kerja minimal selama 3 bulan pada saat pandemi (tahun 2020-2021). Jumlah responden dalam penelitian ini adalah sebanyak 221 orang. Data dianalisis dengan menggunakan uji regresi berganda untuk menguji pengaruh antara variabel independen (persepsi terhadap praktik keselamatan pribadi, organisasi dan respon yang dirasakan terkait COVID-19) dan variabel dependen (cara menangani risiko COVID-19). Mayoritas responden berjenis kelamin perempuan (85.5%); 76,5% berstatus menikah; 88,7% responden bekerja di Puskesmas dengan 48,4% diantaranya terakreditasi paripurna, dan 11,3% responden bekerja di rumah sakit dengan 8.1% diantaranya terakreditasi paripurna. Penelitian ini menemukan adanya pengaruh pada praktik keselamatan pribadi tenaga kesehatan (0.000) dan respon yang dirasakan (0.025) terhadap cara menangani risiko COVID-19. Sedangkan praktik keselamatan organisasi tidak berpengaruh terhadap cara menangani risiko COVID-19. Fasilitas layanan kesehatan perlu mengadakan pelatihan keselamatan dan dukungan psikososial untuk meningkatkan kesiapan dan ketahanan tenaga kesehatan saat krisis.

Received 01 August 2024 **; Reviewed** in 13 March 2025 **; Accepted** in 13 June 2025 **; p-ISSN** 2302–707X - **e-ISSN** 2540–8828 ; **DOI:** 65https://doi.org/10.20473/jbk.v14i1.2025.56-65 **; Cite this as :** Dhamanti I, Muhamad R, Sari LAP. Analysis of The Influence of Personal Safety Practices, Organization and Responses Perceived by Health Workers on How to Manage The Risk of COVID-19. J Biometrika dan Kependud [Internet]. 2025;14(1):46–55. Available from: https://doi.org/10.20473/jbk.v14i1.2025.56-65

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is a new disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus. This virus spreads through droplets (fluids released when coughing or sneezing) or aerosols (1). WHO has declared COVID-19 a global pandemic (2). The spread of COVID-19 has impacted various sectors, from the economy and social sectors to public services, including health.(3)Studies show that Indonesia's health system capacity is insufficient to handle the COVID-19 pandemic (4). The decrease in supply and low demand for health services resulted in the temporary suspension of the provision of services (5). A study conducted by the Ministry of Health and UNICEF in May 2020 found that nearly 84% of all health facilities experienced disruptions in the provision of services (6). In addition, the allocation of Human Resources (HR) in health facilities tends to focus solely on providing healthcare to COVID-19 patients, resulting in suboptimal healthcare for non-COVID-19 patients (7,8).

Doctors, nurses, and healthcare workers in healthcare facilities who are on the front lines in dealing with COVID-19 are at high risk of exposure to the virus (4). Healthcare workers stated that their main concerns were the highly contagious nature of COVID-19, limited availability of Personal Protective Equipment (PPE), poor or inadequate risk control procedures implemented by hospitals, and long working hours or working extra shifts, especially at the beginning of the pandemic (9). Working in the healthcare system during the COVID-19 pandemic causes high levels of stress or psychological burden.(10–12)Anxiety about family members being exposed to COVID-19 is also associated with mental health problems in both medical and non-medical professional groups (13).

Addressing healthcare workers' perceptions of COVID-19 transmission from patients has naturally led to healthcare workers' efforts to practice personal safety in the workplace. Vaccinating healthcare workers is a top priority to reduce the spread of COVID-19.spread of COVID-19 infection among health workers (14). Greater emphasis on the use of PPE is an infection control strategy implemented by healthcare workers (15). Efforts to implement hand hygiene, cleaning and disinfection are necessary to prevent infections acquired from healthcare services in care facilities (16,17). Stricter visitor restrictions in “high-risk” areas compared to other healthcare areas impact patients, healthcare workers, and the healthcare system as a whole (18).

The government and relevant stakeholders have an obligation to protect and safeguard healthcare workers from COVID-19 transmission. Therefore, measures to prevent and control COVID-19 infections in healthcare facilities, particularly among healthcare workers, are necessary (16). Inadequate or inappropriate infection prevention and control standards are another important factor influencing why nurses do not comply with infection control standards (19,20). Positive leadership in healthcare appears to be a prerequisite for effective infection control activities (20) in the COVID-19 era.

Health workers' awareness of infection prevention and control measures, effective communication, and dissemination of appropriate information will have an impact on reducing stress and worry (21). One way to address the risk of COVID-19 is by implementing emotional management measures for healthcare workers. Collaboration between mental health professionals and healthcare workers in intensive care units is crucial to reduce stress and the risk of depression. Some healthcare facilities have also established rest areas to provide meals, relaxation, and regular visits by counselors (22). As a precaution, healthcare workers have also limited direct exposure to the general public and their family members by choosing online media for interaction (23).

Based on the explanation above, it is clear that COVID-19 risk management practices can support personal and organizational safety practices, as well as perceived risk responses among healthcare workers. Personal safety practices are healthcare workers' efforts to minimize exposure to COVID-19, such as using appropriate PPE, maintaining hand hygiene, and maintaining physical distance (24). Organizational safety practices are healthcare organizations that prioritize worker health, such as conducting ongoing assessments and adaptations to health and safety protocols to support the physical and mental health of healthcare workers. Healthcare workers'

perceived risk response is how healthcare workers perceive and respond to potential dangers or threats resulting from COVID-19, including cognitive and psychological reactions (25).

Therefore, this study was conducted with the aim of examining the influence of healthcare workers' perceptions regarding personal safety practices, organizational practices, and perceived responses to COVID-19 management. Although the COVID-19 emergency phase has ended, the virus has spread, so there is a possibility that new COVID-19 variants could emerge and cause new cases and deaths (26,27). Therefore, the long-term effects of COVID-19 need to be continuously studied, including its impact on healthcare workers and healthcare services, so that healthcare organizations can learn from them.

METHODS

This study used a cross-sectional design because the variables were analyzed online at a single point in time in June 2022 at community health centers and hospitals in Surabaya. This study was analytical because the researchers conducted tests to determine the influence between variables.

The primary data obtained in this study were collected through a questionnaire developed using Google Forms. This research instrument has passed the ethical review with the ethical eligibility number USM/JEPeM/COVID19-32. The inclusion criteria for respondents were healthcare workers working as frontliners at Community Health Centers (*Puskesmas*), Government Hospitals, or Teaching Hospitals in Surabaya City with a minimum of 3 months of work experience during the pandemic (2020-2021). The questionnaire consisted of respondent identity, personal safety practices and workplace services, organizational/occupational safety practices, perceived COVID-19 risk responses, and how to manage COVID-19 risks. The questionnaire has undergone validity and reliability testing with Face Validity. The Content Validity Index (CVI) showed acceptable results, with the Item-level Content Validity Index (I-CVI) ranging from 0.83 to 1.00, and the Scale-level Content Validity Index (S-CVI) ranging from 0.85 to 1.00. Face validity was also acceptable, with the Item-level Face Validity Index (I-FVI) ranging from 0.88 to 1.00 and the Scale-level Face Validity Index (S-FVI) ranging from 0.85 to 1.00. The research questionnaire was distributed through online posters on several social media platforms, including WhatsApp, Facebook, and Instagram.

The data analysis process includes testing the influence between variables of personal safety practices and workplace services (a series of actions taken to reduce the risk of COVID-19 harm to oneself, including in the workplace), organizational/occupational safety practices (efforts made by organizations or workplaces to prevent the risk of harm due to COVID-19), and risk response to COVID-19 (the immediate reaction to the spread of COVID-19, including cognitive and psychological reactions) on COVID-19 risk management (a series of broader and systematic processes in managing COVID-19 risks from start to finish). The four variables are categorized into three, namely poor, sufficient, and good. The analysis stage begins with a classical assumption test, followed by hypothesis testing through multiple linear regression analysis to test the influence of several independent variables on one dependent variable, which must meet the criteria of the F-test and T-test.

RESULT

Based on the data collection results, 221 respondents completed the questionnaire within the specified time. Respondent gender, healthcare facility where they work, healthcare facility accreditation level, and marital status are described in the following table.

Table 1. Socio Frequency Distribution Respondent Demographics

Respondent Identity	F	%
Gender		
Man	32	14.5
Woman	189	85.5
Total	221	100
Marital status		
Not married yet	47	21.3
Marry	169	76.5
Divorced	5	2.3
Total	221	100

Respondent Identity	F	%
Type of health facility where you work		
Community Health Center	196	88.7
Hospital	25	11.3
Total	221	100
Accreditation status of the community health center where you work		
Base	1	0.5
Middle	13	5.9
Main	75	33.9
Plenary	107	48.4
Total	221	100
Accreditation status of the hospital where you work		
Not pass	1	0.5
Middle	1	0.5
Main	4	1.8
Plenary	18	8.1
Missing	1	0.5
Total	25	100

Table 1 shows that the majority of healthcare workers working as frontliners in Community Health Centers (*Puskesmas*) and Government Hospitals or Teaching Hospitals in Surabaya City who participated in this study were 85.5% female; 76.5% married; 88.7% working in Community Health Centers (*Puskesmas*), of which 48.4% were fully accredited, and 11.3% working in hospitals, of which 8.1% were fully accredited. The scores for each variable are explained in detail in Table 2.

The variables with high scores in this study were personal safety practices (67.4%) and organizational safety practices (96.8%), while the other variables were in the medium category, namely risk response to COVID-19 (69.7%) and how to manage COVID-19 risks (77.4%). a Multiple Linear Regression test was conducted to determine the influence of personal safety practices, organizational safety practices, and risk response to COVID-19 on how to manage COVID-19 risks. The results of the multiple linear regression test are explained through the F test in the following table.

Table 2. Respondent Variable Score

Variables	f	%
Personal Safety Practices		
Low	8	3.6
Currently	64	29.0
Tall	149	67.4
Organizational Safety Practices		
Low	1	0.5
Currently	6	2.7
Tall	214	96.8
Perceived COVID-19 Risk Response		
Low	15	6.8
Currently	154	69.7
Tall	52	23.5
How to Manage COVID-19 Risks		
Low	34	15.4
Currently	171	77.4
Tall	16	7.2

Table 3. F Test Results

F	df1	df2	P
13,930	3	217	0.000

The results of the F test, obtained a calculated F value of13,930with an F-table value of 2.65 (F count > F-table) andp-value <0.05, then H0 is rejected and Ha is accepted, meaning that the variables Personal Safety Practices (X1), Organizational Safety Practices (X2) and Risk Response to COVID-19 (X3) have an effect on the variable Handling COVID-19 (Y). Furthermore, the results of the multiple linear regression test are explained through the T test in the following table.

Table 4. T-Test Results

	Estimate	Std. Error	t	P
(Constant)	16,694	3.112	5,364	0.000
Personal Safety Practices	0.219	0.42	5,168	0.000
Organizational Safety Practices	0.136	0.178	0.761	0.447
Perceived COVID-19 Risk Response	0.207	0.92	2,255	0.025

The T-test results table shows that personal safety practices and perceived COVID-19 risk responses influence how people manage COVID-19 risks. Meanwhile, organizational safety practices have no effect on how they manage COVID-19 risks.

DISCUSSION

The results of the regression analysis of this study indicate that there is an influence between personal safety practices on how to handle the risk of COVID-19 with a significance of 0.000. The impact of the COVID-19 pandemic includes drastic restrictions on hospital visits, extended social distancing aimed at minimizing hospital traffic (28). Restrictions on the number of patients at the Margahayu Selatan Community Health Center, Bandung Regency during the COVID-19 crisis in 2021 (29) including proactive steps to prevent the transmission of COVID-19, namely by limiting visitors and unauthorized individuals from entering the building and implementing strict screening of staff (30). Meanwhile, in this study, restrictions on visitors to healthcare facilities and the provision of isolation rooms were categorized as low. This also aligns with a 2022 study, which found that 1.13% of respondents never avoided crowds, and 22.56% never restricted their mobility (31). Visitor restrictions have also been discussed as a source of moral distress for healthcare providers who may disagree with hospital policies (32). The importance of limiting the number of health workers working in isolation rooms also needs attention (33). The isolation room meets the requirements of SARS-CoV-2 transmission-based precautions because it uses all three transmission-based precautions: contact, droplet, and airborne, which requires staff to wear PPE (gowns, goggles, N95s, gloves) throughout the room (34). The availability of adequate facilities and infrastructure for healthcare workers in responding to COVID-19 will influence their behavior in managing COVID-19 risks. Conversely, the lack of adequate preparation and limitations in managing COVID-19 risks, both in terms of facilities and infrastructure, can be contributing factors to COVID-19 transmission among healthcare workers (35). Previous research has shown that safety practices can significantly reduce the severity of consequences (36), so that healthcare workers can better manage COVID-19. When organizations or workplaces create good safety practices, the work environment will feel more positive (37), and control of COVID-19 will become more effective.

A crucial aspect in Indonesia's fight against COVID-19 is how infection prevention and control measures are implemented in hospitals to safeguard the health and well-being of healthcare workers (38). The 2023 study showed that despite the existence of national guidelines from the Ministry of Health, not all healthcare facilities have or adhere to these guidelines clearly and consistently in their implementation. In fact, healthcare workers' understanding and compliance with standard precautions is crucial to preventing infection (39). Lack of clarity creates the potential for unfairness in implementation and raises ethical questions (40). If healthcare workers perceive Infection Prevention and Control (IPC) guidelines as lengthy, ambiguous, or not reflective of international guidelines, they may be unsure which Infection Prevention and Control (IPC) guidelines they should follow (41). This study also found no influence of organizational safety practices on how to manage COVID-19 risks. There was no relationship between experience participating in IPC training and paramedics' mental preparedness for COVID-19 (42). Nurses with new work experience in using hazmat suits and removing PPE are still not fully familiar with and do not fully understand the procedures for handling in isolation rooms. Psychologically, someone with more work experience tends to have more knowledge and experience (43). Understanding of COVID-19 and standard precautions can influence the implementation of COVID-19 IPC practices (44).

The results of this study's regression analysis indicate a significant effect of 0.025 on perceived responses to COVID-19 risk management. This finding aligns with previous research showing that perceived responses by healthcare workers, including emotional vulnerability, have a strong and consistent influence on preventative behavior or COVID-19 management (45). Job demands and fear of infection were key factors associated with thoughts about the pandemic. While these may have an indirect impact on health outcomes, worry is a key factor that can influence perceptions of the effectiveness of healthcare workers in handling the pandemic (46). Ensuring the safety of healthcare workers is critical not only to their well-being but also to the well-being of the patients, staff, and communities they serve (38). In fact, more than half of frontline healthcare workers providing intensive care, involved in tracking and screening patients are at risk of experiencing

psychological distress that requires further psychiatric evaluation (47)This is in line with the findings of this study, which showed that healthcare workers' reactions to COVID-19 were stressful. Healthcare workers experience stress due to their responsibility for ensuring visitor compliance with infection control measures and ensuring the efficiency of cleaning processes in wards to maintain adequate hygiene to meet high patient turnover rates (41). COVID-19 causes psychological distress and post-traumatic stress among healthcare workers which has many factors such as close contact with affected patients, forced transfer to handle infected patients, inadequate training on the use of PPE, fear of quarantine from family and community factors (societal stigma against hospital workers) which is also important in the healthcare scenario in India. This is relevant to the incident in Indonesia which shows that the majority of healthcare workers also experience stress and psychological distress during the crisis situation or the COVID-19 pandemic due to the negative stigma of society against hospital workers (48).

CONCLUSIONS AND SUGGESTIONS

Conclusion

Based on the research findings described, it can be concluded that personal safety practices and risk responses influence COVID-19 management, while no influence was found on organizational safety practices. These findings emphasize the importance of individual empowerment and personal perceptions in dealing with risk, compared to purely organizational factors.

Suggestion

Healthcare facilities should regularly conduct training focused on improving individuals' abilities to implement personal safety practices. This training should cover the proper use of personal protective equipment (PPE), stress management, and behavior-based infection prevention. Furthermore, because healthcare workers' perceptions and personal responses are crucial in crisis situations, institutions should also provide counseling services, experience sharing spaces, and psychological support to strengthen their mental resilience, particularly in situations like a pandemic.

ACKNOWLEDGEMENT

This article was written by ID, the project leader, and members of the team involved in the article, based on research on the Analysis of the Influence of Personal Safety Practices, Organizational Responses, and Perceived Responses of Healthcare Workers on COVID-19 Risk Management. The authors are solely responsible for the content of this article.

AUTHOR CONTRIBUTIONS

The lead author ID was responsible for the study design, data collection, analysis of the results, and drafting of the article. RM contributed to the final revision of the article. LAPS was involved in the statistical analysis and interpretation of the results. All authors have read and approved the final manuscript for publication.

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