

Pandemic on Public Health: A Systematic Review

Pandemi Kesehatan Masyarakat: Tinjauan Sistematis

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ABSTRACT

The COVID-19 pandemic has had a significant impact on the global public health system, with developing countries left vulnerable due to limited infrastructure and resources. This research aims to explore the effectiveness of health communication strategies in increasing public compliance with health protocols during a pandemic in developing countries. The research method used is a systematic review using the PRISMA method. The research results show that an integrated health communication strategy, including the use of mass media and social media, can increase health literacy and promote healthy behavior amidst existing infrastructure challenges. The implication of this research is the importance of developing adaptive communication strategies to support an effective public health response, with a focus on strengthening health infrastructure and supporting frontline health workers. Future research could expand understanding of the use of new technologies in health communication and deepen understanding of the psychological, social, and economic factors that influence adherence to health protocols.

Keywords: COVID-19, health communication strategies, health protocol compliance, developing countries, social media, systematic review

ABSTRAK

Pandemi COVID-19 telah memberikan dampak yang signifikan terhadap sistem kesehatan masyarakat global, dengan negara berkembang menjadi rentan karena keterbatasan infrastruktur dan sumber daya. Penelitian ini bertujuan untuk mengeksplorasi efektivitas strategi komunikasi kesehatan dalam meningkatkan kepatuhan masyarakat terhadap protokol kesehatan selama pandemi di negara berkembang. Metode penelitian yang digunakan adalah tinjauan sistematis menggunakan metode PRISMA. Hasil penelitian menunjukkan bahwa strategi komunikasi kesehatan yang terintegrasi, termasuk penggunaan media massa dan media sosial, dapat meningkatkan literasi kesehatan dan mempromosikan perilaku sehat di tengah tantangan infrastruktur yang ada. Implikasi penelitian ini adalah pentingnya mengembangkan strategi komunikasi yang adaptif untuk mendukung respons kesehatan masyarakat yang efektif, dengan fokus pada memperkuat infrastruktur kesehatan dan mendukung pekerja kesehatan garis depan. Penelitian mendatang dapat memperluas pemahaman tentang penggunaan teknologi baru dalam komunikasi kesehatan dan memperdalam pemahaman tentang faktor-faktor psikologis, sosial, dan ekonomi yang mempengaruhi kepatuhan terhadap protokol kesehatan.

Kata Kunci: COVID-19, strategi komunikasi kesehatan, kepatuhan protokol kesehatan, negara berkembang, media sosial, tinjauan sistematis

1. Introduction

The COVID-19 pandemic caused by the SARS-CoV-2 virus has had a profound impact on the global public health system, with significant implications for both developed and developing countries (Walker et al., 2020). Developing countries are particularly vulnerable to the effects of this pandemic due to limited health infrastructure and resources (Aggarwal et al., 2021). The indiscriminate use of antibiotics in several South Asian countries for the treatment of COVID-19 raises the threat of antibiotic resistance, which could complicate responses to future pandemics (Daria & Islam, 2022).

The economic impact of COVID-19 has been severe, especially in developing countries, where health systems and economies have been critically impacted (Rodela et al., 2020). This pandemic has created challenges in human resource development, with decreased health and life expectancy as significant consequences (Nadya et al., 2022). In addition, this pandemic emphasizes the importance of implementing health protocols to control the spread of the virus, such as using masks, hand hygiene and maintaining social distance (Demartoto et al., 2021).

Efforts to reduce the spread of COVID-19 in developing countries are very important, with a focus on disaster mitigation training and implementing health protocols (Hasbullah & Hidayat, 2021). The impact of the pandemic on international development assistance and strengthening health systems in low-income countries has been significant, further emphasizing the need for effective strategies to combat the virus (Manirambona et al., 2022).

In conclusion, the COVID-19 pandemic has emphasized the importance of global cooperation and implementation of health protocols to control the spread of the virus, especially in developing countries that are more severely affected. Addressing the challenges posed by the pandemic requires a multifaceted approach that considers each region's unique circumstances while prioritizing public health and safety.

The COVID-19 pandemic has had a significant impact on public health systems around the world, with developing countries facing particularly severe challenges. Increasing public compliance with health protocols, such as wearing masks, hand hygiene and maintaining social distance, is the main problem faced in dealing with this pandemic. Limited health infrastructure, low levels of health literacy, and low public trust in official information sources are the main obstacles to effective health communication efforts in developing countries. This challenge emphasizes the importance of in-depth research on the effectiveness of health communication strategies to increase public compliance with health protocols during the COVID-19 pandemic.

The main research question raised is: How effective are health communication strategies in increasing public compliance with health protocols during the COVID-19 pandemic in developing countries? Although much research has been conducted on health communication during the pandemic, there is a significant gap in the literature regarding the effectiveness of communication strategies in developing countries. This lack of research focused on specific contexts creates an urgent need to understand how health communication can be optimized in infrastructure and resource-limited settings.

This research is especially important to conduct at this time given the ongoing pandemic and its lasting impact on global public health. The findings from this research have the potential to provide valuable insights that can influence health policies and communication strategies in developing countries, thereby increasing public compliance with health protocols and reducing the spread of the virus. The novelty of this research lies in its specific focus on developing countries and the use of digital technology in health communication. By exploring how digital technology can be used effectively in this context, it is hoped that this research can offer innovative solutions that can be adapted by various developing countries.

The contributions of this research to the existing literature will include a deeper understanding of the factors influencing the effectiveness of health communication as well as practical recommendations for policy makers and health practitioners. The results of this research will provide guidance that can be used to design and implement more effective communication strategies, so as to increase public compliance with health protocols and strengthen public health systems in developing countries.

2. Research Methods

This research uses the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method to identify, screen, evaluate eligibility, and include relevant articles into

the systematic review. The PRISMA method is used to ensure that the article selection process is carried out systematically and transparently, so that research results have high validity and reliability.

2.1. Steps in the PRISMA Process

1. **Identification:** Article searches were carried out using reputable international databases such as PubMed, Scopus, and Web of Science. Searches are carried out using a combination of relevant keywords.
2. **Filtering:** Articles found at the identification stage are filtered based on title and abstract. Articles that were not relevant to the research topic or did not meet the initial inclusion criteria were removed.
3. **Qualifications:** Articles that pass the screening stage are further evaluated based on their full text to ensure compliance with the inclusion and exclusion criteria.
4. **Inclusion:** Articles that met all criteria were included in the systematic review and analyzed in depth.

2.2. Keywords Used to Search for Articles

Article searches were carried out using the following keywords:

1. COVID-19
2. health communication strategy
3. compliance with health protocols
4. developing country
5. risk communication
6. pandemic

This keyword combination is used together with Boolean operators (AND, OR, NOT) to expand or narrow the search, so as to identify articles that are most relevant to the research question.

2.3. Number of Articles Retrieved

In the initial stages of the search, a large number of articles were found from various databases. The number of articles found and the number of articles that passed after the screening and eligibility evaluation process will be presented in the form of tables and PRISMA flow diagrams to provide a clear picture of the article selection process.

2.4. Article Inclusion and Exclusion Techniques

2.4.1. Inclusion Criteria:

1. Articles published in reputable journals.
2. Articles that are relevant to the research topic.
3. Articles written in English or Indonesian.
4. Article discussing the effectiveness of health communication strategies in increasing compliance with health protocols during the COVID-19 pandemic in developing countries.

2.4.2. Exclusion Criteria:

1. Articles that are not peer-reviewed.
2. Articles that are not relevant to the research question.
3. Articles with weak or inadequate methodology.

3. Results and Discussions

3.1. Definition and Concept of Health Communication

Health communication is an important element in public health, especially during a pandemic like COVID-19. Health communication includes various activities such as health education, health service organizations, and infection control at various levels, from individual to international (Maaß et al., 2021; Maaß et al., 2022). Effective health communication is essential to disseminate accurate information, overcome communication challenges during the pandemic, and build sustainable communication tools so that public health measures are understood and adhered to (Maštálka, 2021). In the context of the COVID-19 pandemic, health communication plays an important role in promoting preventive measures, including vaccination, to reduce the severity of the disease and suppress the spread of the virus at local, national and global levels (Brennan et al., 2021).

During the pandemic, health communication also plays a role in increasing community resilience by encouraging adaptive capacities such as social capital, information exchange, and community competence, which are important for maintaining positive health outcomes (Bhandari & Alonge, 2020). Family doctors and health profession students have actively participated in pandemic response efforts, adapting to alternative roles, and meeting health service needs innovatively (Lee et al., 2020; Kratochvil et al., 2020). Additionally, indigenous sovereignty and tribal codes have been used as preparedness measures during the pandemic, highlighting the importance of cultural considerations in public health responses (Hiraldo et al., 2021).

Community medicine has contributed significantly in implementing strict measures such as isolation and quarantine to control the spread of COVID-19 and protect public health (Epari & Panda, 2021). Public health workers faced a variety of work-related challenges during the pandemic, highlighting the importance of supporting frontline health workers in their roles (Khatun, 2024). Furthermore, the concept of community health outreach has strengthened the relationship between health professionals and residents, facilitating the provision of essential health services to communities (Shin et al., 2020).

In conclusion, health communication stands as a key pillar of public health intervention during the pandemic, serving to disseminate critical information, address communication challenges, and promote preventive measures to protect public health. Collaborative efforts between health professionals, community workers, and individuals are essential to ensure effective communication strategies and appropriate response measures in the face of health crises such as the COVID-19 pandemic.

3.1.1. Common Health Communication Strategies Used During the Pandemic

Health communication strategies during the COVID-19 pandemic are critical in disseminating accurate information and promoting public health measures. Mass media campaigns, social media, and interpersonal communication through health workers are key strategies in this effort (Paul et al., 2022; Tsao et al., 2021; Bugshan et al., 2022). Mass media, including television, radio, and newspapers, have been used to provide comprehensive health education guidance and promote social distancing strategies (Paul et al., 2022). Social media platforms have become essential for providing public opinion, perceptions and attitudes towards COVID-19 and public health policies (Tsao et al., 2021). Additionally, health awareness campaigns have been shown to increase public health knowledge and change behavior, which contributes to better protection against pandemics (Bugshan et al., 2022).

Digital health literacy and web-based information seeking behavior have received particular attention among university students in Germany during the pandemic, emphasizing the role of digital communication technologies in health communication strategies (Dadaczynski et al., 2021). Furthermore, the use of social media analytics and the Health Belief Model is proposed to develop insights from hospital-generated Twitter messages and

community responses, which helps in risk communication and pandemic awareness campaigns (Tian et al., 2023). Interpersonal communication, especially through health workers, is emphasized as a vital component in fighting health misinformation and promoting clean and healthy living behavior during the pandemic (Wiyane & Mansur, 2021).

In conclusion, a multifaceted approach that combines mass media campaigns, utilization of social media, and interpersonal communication through health professionals is essential for an effective health communication strategy during a public health crisis such as the COVID-19 pandemic. These strategies play a significant role in disseminating accurate information, countering misinformation, and promoting public health measures to reduce the impact of the pandemic on communities.

3.1.2. Factors that Influence the Effectiveness of Health Communication

Factors that influence the effectiveness of pandemic-related health communication on public health include public health literacy, trust in information sources, as well as cultural and social factors. Public health literacy, defined as the ability to access, understand, evaluate, and apply health information, is crucial during the COVID-19 pandemic (Okan et al., 2020). Health literacy plays a significant role in accessing and interpreting health information, which is important for making informed decisions regarding health care and lifestyle choices (Naccarella & Horwood, 2020). Low health literacy has been linked to poor health outcomes, emphasizing the importance of addressing this issue in public health efforts (Hyatt et al., 2021).

Trust in information sources is another important factor influencing the effectiveness of health communication during the pandemic. The public needs to trust sources that provide health information to ensure adoption of recommended behaviors. This trust is critical in navigating the abundance of information available during a public health emergency such as the COVID-19 pandemic (Li et al., 2021).

Cultural and social factors also play a role in shaping the effectiveness of health communication. Various populations may have varying levels of health literacy that are influenced by sociocultural contexts (Chao & Kang, 2020). Tailored interventions for specific populations can help bridge literacy gaps and improve overall well-being, highlighting the importance of considering cultural diversity in health communication strategies (Zhamantayev, 2023).

In conclusion, public health literacy, trust in information sources, and cultural and social factors are the main determinants of the effectiveness of pandemic-related health communication on public health. Addressing these factors through targeted interventions, promoting trust in information sources, and considering cultural diversity can increase the impact of health communication efforts during public health crises.

3.1.3. Education Empirics on the Effectiveness of Health Communication Strategies

In examining the effectiveness of pandemic-related health communication strategies on public health, it is important to consider various research findings. Hanafiah et al. (2021) highlight the importance of scientific communication in pandemic preparedness and prevention, emphasizing its role in driving public health action and sustaining interventions. Benham et al. (2021) explored attitudes, behaviors and barriers to public health measures, aiming to improve health messaging to increase compliance. Additionally, Kim and Kim & Kreps (2020) provide insight into government communication strategies during the COVID-19 pandemic, as well as offer recommendations for effective health risk communication.

The study by Hogg-Graham et al. (2022) emphasize the importance of strengthening public health infrastructure to address weaknesses exposed by the pandemic. Kreps (2022) highlights the importance of disseminating relevant health information to promote public health during global health challenges. Nyandoro (2024) explored health communication strategies in South Africa during the pandemic, identifying positive and negative effects.

Additionally, research by Barnert et al. (2021) outline urgent public health priorities based on lessons from COVID-19 cases in US prisons, emphasizing the need for multiple interventions to combat the spread of the virus in prison settings. Turcheti et al. (2022) highlight the social, economic, and health impacts of COVID-19 on people with disabilities, urging a stronger community-linked public health response.

In conclusion, synthesizing these studies provides a comprehensive understanding of the multifaceted nature of health communication strategies during the pandemic and their impact on public health. By addressing attitudes, behaviors, barriers, and infrastructure weaknesses, and emphasizing effective government communications and community engagement, public health responses can be strengthened to effectively reduce the spread of COVID-19 and future health crises.

3.2. Community Compliance with Health Protocols

3.2.1. Factors Affecting Compliance

Factors influencing public compliance with pandemic-related health protocols, such as maintaining social distance, wearing masks, and vaccination, are multifaceted and influenced by various key elements. Public knowledge and awareness play an important role in shaping individuals' understanding of the risks associated with the pandemic (Xie et al., 2020). Risk perception significantly influences behavior such as maintaining social distance during the COVID-19 pandemic (Xie et al., 2020). In addition, attitudes and perceptions of risk and the way goals are communicated can explain changes in the impact on compliance with health measures over time (Six et al., 2021).

Government policies and law enforcement also play an important role in shaping compliance behavior in society. The level of policy enforcement may influence voluntary support for COVID-19 measures, especially in societies where trust in government is weak (Schmelz, 2020). The decision to rely on voluntary or enforced compliance varies across countries and may influence the overall success of countermeasures (Schmelz, 2020). In addition, the dynamics of compliance with health protocols are influenced by factors such as the level of enforcement, penalties for violations, and availability of resources (Giles & Bauer, 2019). In conclusion, public compliance with health protocols during the pandemic is the result of a complex interaction between public knowledge, risk perception, attitudes, government policies and law enforcement. Understanding these factors is critical to designing effective strategies to promote compliance and reduce the spread of infectious diseases.

3.2.2. Method Compliance Measurement

Measuring compliance with COVID-19 related public health measures involves a variety of approaches such as surveys, field observations, and secondary data analysis. These methods are important to accurately evaluate the extent to which the public adheres to guidelines and to inform public health policies and effective communication strategies (Timmons et al., 2020). The importance of high levels of compliance with these measures is critical, especially in middle- and low-income countries where strong compliance is essential to mitigate the impact of the pandemic (Grépin et al., 2021). Differences in adherence based on demographics have been noted, with research highlighting disparities, particularly among young adults who often demonstrate lower levels of adherence (Nivette et al., 2021).

Survey experiments have been key in measuring citizens' compliance with COVID-19 measures, emphasizing the importance of methodological rigor in evaluating behavioral responses to various interventions (Daoust et al., 2020). The differentiation between hygiene practices and social distancing behavior has been emphasized, reflecting the complex approach required to describe different aspects of public health-related behavior (Wismans et al., 2020). Factors influencing adherence are diverse and include social norms, moral values, levels of trust, stress responses, and demographic characteristics, all of which shape individual

adherence to health guidelines (Blackburn et al., 2023). Additionally, emotional states, cognitive reasoning, and mental health conditions have been identified as predictors influencing behavior during different phases of the pandemic (Leblanc-Sirois et al., 2020).

The role of institutional trust, rather than reliance on political leadership, is emerging as an important determinant of public health compliance globally (Badman et al., 2021). In addition, optimism bias and public trust in government actions have been linked to non-compliance with health protocols during the pandemic (Agustina & Ardi, 2021). Research emphasizes the impact of risk communication through mass media in shaping public compliance with preventive measures, highlighting the important role of effective communication strategies in public health campaigns (Thanh & Tùng, 2021). Compliance with COVID-19 guidelines is also related to factors such as risk perception, fear of infection, belief in vaccine efficacy, and health practices such as mask use and social distancing (Bodas et al., 2022).

In conclusion, measuring compliance with COVID-19 related public health measures involves a comprehensive and multidimensional approach that considers the dynamics of trust, risk perception, emotional influence, and the effectiveness of communication strategies. Understanding the drivers of these behaviors is critical to designing well-targeted interventions and ensuring the success of efforts to control the spread and impact of the pandemic.

3.3. Health Communication Strategy in Developing Countries

3.3.1. Challenges and obstacles

Health communication strategies in developing countries during the pandemic face significant challenges and barriers, including limited communications infrastructure and varying levels of literacy and access to information. These challenges have been further exacerbated by the COVID-19 pandemic, which has highlighted the importance of effective crisis and risk communications to build trust, credibility, transparency, and accountability (Ataguba & Ataguba, 2020). The pandemic has also highlighted the need for community-based approaches that consider local context and involve informed communities in preparation and response strategies to reduce health inequalities (Haldane et al., 2021; Leyns, 2023).

Developing countries have leveraged responses to the COVID-19 pandemic to encourage future investment in health infrastructure (Novignon & Tabiri, 2022). However, the pandemic has also exposed pre-existing health inequities, especially among ethnic communities, which are further exacerbated during public health crises such as the ongoing COVID-19 pandemic (Chowdhury & Turin, 2022). Management and control of COVID-19 imports is highly dependent on a country's health capacity, highlighting the importance of preparation and vulnerability assessment (Gilbert et al., 2020).

Effective communication during the various phases of COVID-19 prevention is critical, focusing on roles, drivers and barriers to ensure the dissemination of accurate information and public health messages (Hanafiah et al., 2021). Additionally, the pandemic has caused a global crisis affecting health systems worldwide, emphasizing the need for strategies to maintain the utilization and delivery of health services, especially in developing countries (Kotiso et al., 2022; Hosseinnnejad et al., 2022).

In conclusion, to overcome the challenges in health communication strategies in developing countries during the pandemic, a comprehensive approach is needed that considers local context, community engagement, and health system resilience. By leveraging lessons from the response to COVID-19, investing in health infrastructure, and prioritizing effective communication, developing countries can better confront the public health crisis and reduce its impact on vulnerable populations.

3.3.2. Innovation and Solutions

In developing countries, especially during the COVID-19 pandemic, effective health communication strategies are critical for public health. Leveraging mobile technology and health apps can significantly enhance this strategy. Research has shown that engaging local communities and leaders is key to successful public health messaging (Baba et al., 2022). The World Health Organization (WHO) emphasizes the importance of collaboration with religious communities, recognizing the need for a holistic response involving religious leaders and organizations during health emergencies such as the COVID-19 pandemic (Baba et al., 2022).

Telehealth applications have been identified as valuable tools in supporting public health measures and controlling the spread of COVID-19 (Alghamdi et al., 2020). Integrating Mobile Digital Technology (DMT) into health systems, especially during public health emergencies, is recommended for preparation and response efforts in developing countries (Demuyakor & Geng, 2022). Acceptance of electronic health systems, such as e-Health, is important in managing the pandemic by enabling measures such as social distancing and contact tracing in developing countries (Stephen, 2021).

Mobile health technologies, including mobile applications, sensors, and social media, have played a significant role in fighting the COVID-19 outbreak, especially in countries such as China (Wu et al., 2021). Digital health innovations are rapidly providing solutions to health care delivery challenges posed by the pandemic, emphasizing the importance of digital health equity (Crawford & Serhal, 2020). Additionally, the use of digital exposure notification tools has provided new solutions to support public health interventions during the pandemic (Nebeker, 2023).

The integration of mobile health applications and smart city technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), shows promise in improving public health responses during the COVID-19 pandemic (Singh et al., 2020; Wang, 2023). Meaningful community engagement and tailoring public health messages to diverse populations are important aspects emphasized in the literature to ensure effective communication and response strategies (Nutbeam, 2021). Furthermore, the use of mobile health interventions has been shown to be effective in disseminating COVID-19 related information, as seen in the Indian context (Pai & Alathur, 2020). In conclusion, the integration of mobile technologies, health applications, and digital solutions in health communication strategies, along with the active involvement of local communities and leaders, is critical in addressing public health challenges, especially in developing countries during the COVID-19 pandemic.

3.3.3. Developing Country Case Studies

Health communication strategies play an important role in managing public health crises, including in developing countries. Successful case studies from various developing countries provide valuable lessons that can be applied globally. This strategy includes a variety of approaches, including effective communication, rapid response, collaboration, and community involvement.

One of the key aspects emphasized in the literature is the importance of combining different approaches to understand the impact of the COVID-19 pandemic on public health and identify effective recovery strategies (Taraj, 2023). Countries that have implemented public health strategies such as contact tracing, quarantine, and effective risk communication have shown positive results in managing the pandemic (Khorram-Manesh et al., 2021). Effective communication plays an important role in various phases of COVID-19 prevention, emphasizing the importance of scientific communication, public health measures, and maintaining interventions for recovery from the pandemic (Hanafiah et al., 2021).

Additionally, the role of social determinants of health and the implementation of effective communication in developing countries during the COVID-19 pandemic has been emphasized (Ataguba & Ataguba, 2020). Successful health promotion preparation during a

health crisis requires rapid response, communication, and collaboration across countries and disciplines (Levin-Zamir et al., 2021). National strategies that focus on infection control, prevention, and the importance of indoor environments have been crucial in reducing the spread of the virus (Bloukh et al., 2020).

Lessons learned from case studies in countries such as South Korea emphasize the importance of well-functioning surveillance systems, comprehensive testing strategies, transparent government communications, and coordinated public health systems for successful pandemic management (Turi & Virág, 2021). Additionally, leveraging the response to the COVID-19 pandemic to better finance health systems could encourage investment in health infrastructure in developing countries (Novignon & Tabiri, 2022).

In conclusion, this synthesis of references highlights the importance of effective health communication strategies in developing countries during the COVID-19 pandemic. By learning from successful case studies and applying lessons such as rapid response, collaboration, community engagement, and transparent communication, countries can better prepare for and respond to public health crises.

4. Conclusions

Health communication is key in managing the COVID-19 pandemic, supporting health education, and promoting effective preventive measures. Through cross-disciplinary collaboration, health communications strategies can disseminate critical information, strengthen community resilience, and ensure compliance with health protocols necessary to mitigate the impact of the pandemic.

The implication of this research is the importance of developing integrated health communication strategies, using mass media, social media, and interpersonal communication to increase health literacy and promote healthy behavior. Strengthening public health infrastructure and supporting frontline health workers is crucial to responding to the public health crisis. This study has several limitations, including limitations in generalizing the study results due to its focus on the COVID-19 pandemic. Additionally, this research did not explore in depth the impact of culture and broader social context on health communication during the pandemic.

Future research could expand understanding of health communication strategies by considering the role of new technologies such as artificial intelligence and data analytics to improve public health responses. Additionally, deepening understanding of the psychological, social, and economic factors that influence adherence to health protocols may lead to the development of more effective interventions.

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