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Research Article

Analysis of Policy Recommendations in Efforts to Control Positive COVID-19 Cases in South Sulawesi Province, Indonesia

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ABSTRACT

Introduction: Inconsistent COVID-19 policies have caused the government to experience a degradation in public trust. So, it is necessary to propose policy recommendations for controlling positive COVID-19 cases that receive support from various multi-sectoral areas. **Method:** This research was conducted in January–May 2023. This type of research is qualitative-exploratory, using case study methods through in-depth interviews and literature studies of all informants. Sampling was purposive sampling. This research variable uses Patton and Sawicki's alternative policy criteria theory (1986). **Results:** The proposed policy recommendations are increasing COVID-19 vaccine coverage and surveillance for monitoring coronavirus mutations. The two policy recommendations have met technical feasibility because they have clear outcomes, where the outcome of vaccination is to establish herd immunity. In contrast, surveillance of coronavirus mutations has the outcome of analyzing the efficacy of the COVID-19 vaccine. From the economic and financial possibility side, a budget is available with the advantage of carrying out normal activities without any restrictions and efficiency in the health budget. Regarding political viability, the government supports the policy, does not violate the rules, and serves the community's needs. Regarding administrative operability, the government as the authorized party is considered to have adequate capability, organizational support, and institutional commitment. **Conclusion:** The policy recommendations proposed by policymakers and epidemiology experts are increasing COVID-19 vaccination coverage and monitoring surveillance of coronavirus mutations, and it is hoped that the South Sulawesi Provincial Government can consider the proposed policy recommendations.

Key words: COVID-19, Health Policy, Policy Analysis, Surveillance, Vaccination.

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INTRODUCTION

Coronavirus disease 2019, or COVID-19, is classified as a pandemic by the World Health Organization (WHO).[1] COVID-19 has spread to almost all countries, including Indonesia.[2] The total positive cases of COVID-19 in Indonesia as of September 27, 2022, were 6,423,873 people, with a total of 158,036 deaths.[3] It makes Indonesia ranked 20th as the country with the highest cumulative number of COVID-19 cases in the world.[4]

Nationally, South Sulawesi Province is ranked 11th with the highest number of confirmed positive COVID-19 cases as of December 19, 2022, with 148,460 cases and 2,570 deaths. This data makes South Sulawesi Province the second-highest province with positive cases of COVID-19 in eastern Indonesia after Bali Province.[5]

As time goes by, the SARS-CoV2 virus undergoes a mutation process so that many new variants of COVID-19 are discovered.[6] However, only a few new variants of COVID-19 are of significant concern (variants of concern) because they are considered dangerous. According to WHO, one of the variants of concern is Omicron. The Coronavirus variant from Omicron is actively mutating. According to the COVID-19 Task Force Handling Team on November 10, 2022, the Omicron XBB Sub Variant has spread to 37 countries, including Indonesia.[7,8]

Efforts to control COVID-19 are carried out in various ways, such as vaccination.[9] The COVID-19 vaccination was first carried out in Indonesia on January 13, 2021, and in South Sulawesi Province on January 14, 2021.[10,11] As of December 4, 2022, full-dose vaccination coverage for South Sulawesi Province has not yet reached 70%, and access to booster vaccines has not yet reached 30%.[12]

Due to the above facts, UNICEF emphasizes that COVID-19 has not been resolved. The ongoing impact of COVID-19 has led to changes in policy and program implementation activities.[13] A series of challenges are still encountered in the process of controlling COVID-19. These challenges do not only originate from society but can also originate from the government. Government policies that are constantly changing and inconsistently implemented ultimately give rise to public distrust of the government. Even though the core of controlling COVID-19 is the leadership of a leader, in this case, the government.[14]

Leadership is essential in making the right policies amidst the uncertainty of the situation and public paranoia due to COVID-19. Leadership qualities are tested not to give the impression of trial and error in policymaking. Good relationships with the community are needed for the leadership role to function well. In this way, a sense of trust will be built.[15]

METHOD

Research Types and Designs

This study is qualitative study with exploratory research type. The method used in this research is the case study method.

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Time and Location

This research was conducted from January to May 2023. The research location was South Sulawesi Province, Indonesia.

Research Informant

The determination of informants in this research was carried out deliberately (purposive sampling). This research informant is part of the Task Force for handling the 2019 coronavirus disease in South Sulawesi Province based on Governor's Decree Number 1669/VII/2021.

Data Collection Sources and Techniques

The data sources for this research are primary data and secondary data. Primary data was obtained through in-depth interviews. Secondary data was obtained in writing by reviewing related documents. The data collection techniques are through interviews and documentation.

Data analysis

The data analysis technique in this research is the Miles and Huberman model data analysis technique. The qualitative data analysis technique is carried out interactively and continuously until completion, resulting in saturated data.[16] Data analysis activities include data reduction, data presentation, and conclusion.

RESULTS

Informant Characteristics

The characteristics of research informants are detailed in the following table:

Table 1 shows there are ten informants. The research informants comprised eight policymakers, two South Sulawesi Province COVID-19 task force experts, and epidemiology experts.

As shown in Table 2, the policy recommendations for the COVID-19 Vaccination Program have been met *with technical feasibility* because the precise outcome is increasing herd immunity so that COVID-19 cases remain under control.

"The "COVID-19 vaccination is a solution to increase herd immunity. Indonesia stated that COVID would still exist and that there would be transmission in the community. However, the number of cases is under control. It does not cause a significant spike that cannot be treated in hospitals." (AI, 51 years old)

The informant also stated that the South Sulawesi Provincial Government is trying to provide vaccines that the entire community can access.

"We at the provincial level will ensure that the vaccine remains available. village or sub-districtThen ensure that at the district level, community health center, up to the village/sub-district level, there is no vaccine shortage." (SH, 45 years)

From an economic and financial perspective, it refers to the budget for implementing policy recommendations and the benefits obtained. The available budget for COVID-19 vaccination comes from the Indonesian Budget of around 400 trillion rupiah and from the Regional Government Budget, which is currently managed by the South Sulawesi Provincial Health Service, as well as assistance from NGOs (non-governmental organizations) amounting to Rp 65,560,185,527.

"The government will finance vaccination, meaning that the Indonesian Budget of around 400 trillion has been prepared." (IS, 46 years old)

"Recently, support for financing COVID-19 has been huge, from NGO assistance and regional budgets. Specifically at the provincial health service, based on the report we received from the financial sector, the total was IDR 65,560,185,527." (SH, 45 years old).

The profits generated from the COVID-19 vaccination are not profit-oriented. However, controlling COVID-19 using vaccination has resulted in the community's economic and social activities gradually recovering, as has the efficiency of the health budget for financing COVID-19, such as hospital treatment costs and the provision of quarantine places.

"We hope that life can continue normally again. "Then economic and social activities can also continue as well as possible." (SH, 45 years old)

"The advantage is reduced health care costs in hospitals and reduced costs for quarantine places" (WAY, 40 years)

From a political perspective, viability is related to the influence of politics or various power groups on a policy. Recommendations for the COVID-19 vaccination policy can be accepted by political actors and other actors in society, as reflected in cross-sectoral cooperation.

"It can be well received because there is coordination between social services, health services, and other related agencies." (HN, 53 years old)

"Broadly speaking, alternative COVID-19 vaccine policies can be accepted by society, especially key figures such as political figures, community organizations, and others." (SH, 45 years old)

The recommended COVID-19 vaccination policy also does not conflict with the values of community life and does not conflict with legal regulations.

"The COVID-19 vaccination does not conflict with the values of society." (EW, 45 years old)

"So, presidential decree number 12 of 2020 regarding the designation of the 2019 coronavirus disease, or COVID-19, as a national non-natural disaster, the status of which has not yet been revoked by the government [...] means that currently Indonesia still has emergency status for COVID-19, so efforts to control cases are still being carried out." (WAY, 40 years)

The recommendation for the COVID-19 vaccination policy guarantees protection sought by the government to meet the community's needs.

Table 1. Characteristics of Research Informants.

No.	Informant	Age (Years)	Work unit
1.	IS	46	South Sulawesi Province Regional Development Planning, Research and Development Agency
2.	YDR	40	Doctor in Charge of the Microbiology Laboratory, Makassar Health Laboratory Center
3.	WAY	40	South Sulawesi Province Regional Disaster Management Agency
4.	SH	45	South Sulawesi Provincial Health Service
5.	H.N	53	South Sulawesi Provincial Social Service
6.	E.W	45	Secretary of the South Sulawesi Province Communication and Information Service
7.	M.S	53	South Sulawesi Province Manpower and Transmigration Service
8.	FL	46	Indonesian Red Cross, South Sulawesi Province
9.	R.A	53	COVID-19 Task Force Expert Team/Epidemiology Experts From Hasanuddin University
10.	A.I	51	COVID-19 Task Force Expert Team/Epidemiology Experts From Hasanuddin University

Table 2. Summary of Interview Results for Policy Recommendations COVID-19 Vaccination Program in South Sulawesi Province.

Variables	Key Findings	Informant
Technical feasibility	· Availability of the COVID-19 vaccine · Achieved control of Positive COVID-19 Cases	All Informants
Economic and financial possibility	· COVID-19 Control Budget · The profits generated	IS, WAY, SH
Political viability	· Acceptability · Appropriateness · Responsiveness · Legal · Equity	YDR, SH, HN, EW, MS, RA, AI
Administrative operability	· Authority · Institutional commitment · Organizational support · capabilities	WAY, SH, EW, FL, RA, AI

Table 3. Summary of Interviews for Policy Recommendations Corona Virus Mutation Surveillance Activities in South Sulawesi Province.

Variables	Key Findings	Informant
Technical feasibility	· Corona Virus Mutation Surveillance Readiness · A form of anticipating a spike in COVID-19 cases	YDR, WAY, AI
Economic and financial possibility	· Budget Willingness · The profits generated	YDR, SH, FL
Political viability	· Acceptability · Appropriateness · Legal · Responsiveness	YDR, WAY, SH, RA
Administrative operability	· Authority · capabilities · Organizational support	YDR, WAY, SH, RA

The government needs to promote equality and justice, which is the basis for the importance of providing free vaccines.

"The procurement of COVID-19 vaccine stock is estimated based on the population of South Sulawesi, so logistically it should meet the residents' needs." (WAY, 40 years old)

"Vaccination is a right; the government guarantees that people get vaccines with no fees for all people." (AI, 51 years old)

The government also needs a risk communication strategy or communication process that increases individual and community knowledge and understanding regarding the dangers of COVID-19 so that they can anticipate and manage potential risks that may occur.

"This is indeed included in the category of risky communication. So, risk communication means that the government must convey the benefits, risks, and follow-up actions for handling the risks continuously, massively, and systematically through various media channels because the increasing diversity of vaccines confuses the public. The best vaccine is the one that is close to or accessible to the public." (RA, 52 years old)

From an administrative operability perspective, it is known that the authority to implement the recommendations for the COVID-19 vaccination policy is the South Sulawesi Provincial Government through the Provincial Health Service as the implementing element, assisted by the Regency/City Regional Government. The health department collaborates with local government organizations. All parties must be involved.

"Everyone has to move, not only the health service but also the army/police, other regional government organizations such as the information and communication service, the Disaster Management Agency, and then the education service must move so that we can control the response to this COVID pandemic, especially in South Sulawesi." (SH, 45 years old)

There is commitment from top-level administrators, in this case the central government, down to the lower levels, namely regional governments. WHO decisions guide the COVID-19 control policy.

"The central government's vaccination program is, of course, following WHO's directions. […]." (WAY, 40 years old)

As a form of commitment, the regional government issued sanctions for the South Sulawesi Province Regional Work Unit through a circular stating that those who are part of the South Sulawesi Province Regional Work Unit and their families who do not carry out the COVID-19 vaccination until the first booster, no allowance will be paid, except for those who have comorbid diseases.

"The form of commitment is that if you do not get the vaccine, you will not be paid the allowance." (MS, 53 years old).

Meanwhile, in human resource capabilities, the Health Service as the technical implementing unit and Health Human Resources, who take on the role, are considered capable of implementing the COVID-19 vaccination.

"There must be certain government considerations in implementing vaccination. "In terms of vaccine quality, it is supported by good human resources, and vaccinators are prepared." (AI, 51 years old)

The continuation of COVID-19 vaccination to increase vaccination coverage is supported by the availability of equipment in the form of various stocks of COVID-19 vaccines, syringes, cool storage for storing COVID-19 vaccines, and vehicles for distribution of COVID-19 vaccines.

"The main thing is the vaccine, then the injection equipment and adequate health workers. Lastly, it is a tool for storing vaccines. "That will be sent to each district or city [...] Of course, the vehicles will be prepared." (SH, 45 years old)

Another proposed policy recommendation is surveillance of coronavirus mutations with genomic examination as shown in Table 3 using Whole Genome sequencing (WGS) so that the circulating virus mutation variants are known. The outcome of this policy recommendation is that it can help analyze the efficacy of the COVID-19 vaccine, which

is used to overcome or suppress existing mutations of the coronavirus. The results serve as a guideline if other steps are needed if there is an increase in cases; for example, if a virus mutation can potentially become a variant of concern, then anticipatory steps can be taken. The precise results indicate that the coronavirus mutation surveillance activities have fulfilled *technical feasibility*.

"Genomic examination to find out the virus variant uses whole genome sequencing. The mutation of the new COVID-19 virus can also be identified from this genomic analysis. [...] So, let us look at what variants exist in Indonesia to see what variants are currently dominant in circulation. This surveillance is only able to overcome the COVID-19 problem partially. "We need other programs to complete it comprehensively, such as ongoing COVID vaccination." (YDR, 40 years)

"COVID virus surveillance needs to be carried out continuously as a way to ensure cases stabilize and there is no further increase." (RA, 53 years old)

Regarding economic and financial possibilities, the informant stated that it was impossible to estimate the amount of the budget for monitoring the mutation of the coronavirus. However, the source of the budget was the Indonesian Budget and the Makassar Health Laboratory Center.

"The budget comes from two sources: pure rupiah. The pure rupiah is from the government of The Indonesian Budget. "Then, the second budget comes from the internal health laboratory center, meaning that we are a public service agency that can be flexible in using the budget." (YDR, 40 years)

The advantage of this surveillance monitoring of coronavirus mutations is that it carries out genomic examination of circulating coronavirus mutations, and reports from the laboratory are quickly and accurately submitted to the government, allowing for more optimal action or anticipatory efforts by the government before it causes more harm to the country.

"The advantage is that with this genomic examination, we know the characteristics of the virus and the shape of the wall or defense system to anticipate COVID mutations. "The reporting is fast and accurate for the government, so handling actions can be maximized." (YDR, 40 years)

In terms of political viability, the recommendation for a coronavirus mutation surveillance policy can be accepted by political actors, in this case, the government through the Ministry of Health and the Makassar Health Laboratory Center.

"[…] acceptable. "The Health Laboratory Center is under the auspices of the Ministry of Health." (WAY, 40 years old)

Surveillance of coronavirus mutations also does not conflict with society's values and applicable laws and regulations and is responsive to community needs.

"It does not conflict with the values or norms in our society. The basis for the regulations is the Decree of the Minister of Health Number 4642 of 2021 concerning implementing a COVID-19 Examination Laboratory. "Then there is also Minister of Health Regulation Number 13 of 2022 concerning Amendments to Minister of Health Regulation Number 21 of 2020 concerning the Strategic Plan of the Ministry of Health for 2020-2024." (YDR, 40 years)

"The problem is that the Makassar Health Laboratory Center has a working area. The working area is actually in 10 provinces. "So, at the beginning of 2020, because the reference lab was still minimal, we also strengthened the capabilities of the Makassar Health Laboratory Center from year to year." (YDR, 40 years)

In terms of administrative operability, according to the informant's statement, it is known that the actor with the authority to implement the recommended coronavirus mutation surveillance policy is the Ministry of Health through the Makassar Health Laboratory.

"The Ministry of Health appointed the Makassar Health Laboratory Center to be the COVID-19 reference laboratory." (SH, 45 years old)

The Health Laboratory Center is considered capable of carrying out human resource surveillance for the mutation of the coronavirus.

"For human resources, we have analysts, nurses, and specialist doctors." (YDR, 40 years)

The informant also stated that adequate and standard genomic testing equipment support is available. Physical facilities are available as a laboratory (Health Laboratory Center). Other services are available in the form of human resources and funding.

"Our resources are quite capable, starting from equipment resources, human resources, and budget resources." (YDR, 40 years)

DISCUSSION

Policy recommendations do not contain suggestions for follow-up from the study but are actions that policymakers must take.[17] The findings of this research were two policy recommendations proposed by policymakers and epidemiology experts at Hasanuddin University and a team of experts from the COVID-19 task force for South Sulawesi Province. The first policy recommendation is to increase vaccination coverage, and the second is surveillance of coronavirus mutations. This policy recommendation aims to control positive cases of COVID-19 sustainably. The results of this research are in line with research that has been carried out by Hariani et al. (2022), which recommends that the implementation of COVID-19 vaccination policies and programs be integrated with the scenario of developing community immunity (herd immunity) and controlling COVID-19 cases.[18] COVID-19 surveillance is considered urgent for rapid case detection and is the basis for controlling COVID-19.[19]

The COVID-19 vaccination program in South Sulawesi Province has fulfilled all aspects, including technical feasibility, economic and financial possibility, political viability, and administrative operability, by alternative policy criteria theory.[20] It is proven by the availability of funds for the procurement and distribution of the COVID-19 vaccine in health facilities in rural areas, which is supported by the skills of vaccine officers and other professional health workers, as well as the support of the necessary physical facilities and equipment. These results differ from the situation in the Indian health sector, where India is known to not have planned health facilities due to minimal health and healthcare infrastructure.[21] These results also indicate that the number of controlled cases and the bed occupancy rate (BOR) of COVID-19 hospital patients has decreased. This finding is consistent with Lucas et al. (2022), whose study results show that higher vaccination rates in an area at the county level in the US will lead to a decrease in new COVID-19 infections.[22]

As initial information, six types of vaccines are circulating in Indonesia with different levels of efficacy. The efficacy of the CoronaVac (Sinovac) vaccine is 51%. The efficacy of the AstraZeneca vaccine is 63.09%. The efficacy of the Pfizer vaccine is 95%. The efficacy of the Novavax vaccine is 96%. The efficacy of the Sinopharm vaccine is 79%. Finally, the efficacy of modern vaccines is 94.1%. Furthermore, based on the results of an interview with an epidemiologist expert at the Faculty of Public Health, Hasanuddin University, Prof. Ridwan Amiruddin said that the diversity of COVID-19 vaccines provides the ability to cover each other, resulting in increasingly massive immunity (herd immunity). It is different from China, where there is still a lockdown policy due to the high number of cases, one of which is due to its policy of being reluctant to accept vaccines from outside or only relying on vaccines made in its country, such as the Sinovac and Sinopharm vaccines.[23]

Vaccination will be the most effective and efficient strategy to prevent and control the spread of COVID-19.[24,25] High vaccination coverage protects people vaccinated and those who have not received protection from the vaccine, creating herd immunity and reducing the risk of virus mutation.[26] The government's efforts to ensure that people are willing to be vaccinated include providing the COVID-19 vaccine for free to the public.[27]

Vaccines are an effective solution for preventing transmission of COVID-19, but they do not guarantee that they can completely protect 100% from exposure to COVID-19.[23] For this reason, other policies are needed. In this research, a surveillance policy for monitoring coronavirus mutations is proposed.

Viruses threaten health because they acquire genomic diversity during their life cycle. However, several virus mutations have been shown to weaken antibody-neutralizing activity. During the evolution of SARS-CoV-2, new viral mutations may circulate in the human population. Genomic monitoring will be essential to evaluate new viral mutations' emergence, spread, vaccine efficacy, and transmissibility.[28]

Policy recommendations for the surveillance of coronavirus mutations in this research have fulfilled aspects including *technical feasibility*, *economic and financial possibility*, political viability, and administrative operability by alternative policy criteria theory.[20] The government has designated the Makassar Health Laboratory Center as the national reference laboratory for COVID-19 testing to carry out genome examinations supported by competent human capacity consisting of health analysts, nurses, and clinical microbiology specialists. The results are in line with Leite et al. (2022), who found that the Pan American Health Organization (PAHO) is working with public health laboratories in countries within the Americas Region to increase laboratory capacity to generate and provide SARS-CoV-2 genome sequencing data to GISAID on schedule.[29] The government has also allocated funds for monitoring the mutation of the coronavirus. It reflects the government's grave concern for controlling COVID-19 in South Sulawesi Province.

Cross-sector collaboration also continues to be carried out to monitor the transmission of COVID-19 in all sectors of life, even though the clinical results are relatively mild. COVID-19 genomic surveillance is also being carried out in the UK through the G2K-UK Virology Consortium, which involves the collaboration of ten other institutions in the UK working in parallel. The UK has generated 400,000 SARS-CoV-2 genome sequences to investigate the effects of different variants on vaccine effectiveness, pathophysiology, severity of infection, and what else could happen.[30]

The coronavirus mutation surveillance program is recommended as an effort to track and monitor the genome of the dominant circulating SARS-CoV-2 virus to anticipate a spike in COVID-19 cases. Genomic surveillance of COVID-19 cases is carried out in Beijing. In summary, genome comparison revealed higher genome diversity in the imported group compared with the Wuhan exposure group and the local transmission group, indicating continuous genome evolution during global transmission.[31]

Recommendations for controlling COVID-19 have been able to reduce the virus's spread rate in several countries. However, several countries still report increased COVID-19 cases due to relaxed regulations or public non-compliance in implementing health protocols.[32,33] On the other hand, the Indonesian government has issued a policy regarding easing health protocols, such as easing masks in open spaces and no need for PCR and antigen for travelers if the complete COVID-19 vaccine dose includes vaccine up to the third dose or booster.[34]

However, the Indonesian government continues to urge all communities and components of the nation to remain careful and alert when facing the risk of COVID-19. Vaccination awareness should continue to be fueled, as it helps enhance immunity. Communities must also be more independent in preventing transmission, detecting symptoms, and seeking treatment.[35,36]

CONCLUSION

The policy recommendations proposed by health officials and epidemiology experts at Hasanuddin University team of experts from the task force for handling COVID-19 are increasing the coverage of COVID-19 vaccination and monitoring the mutation of the coronavirus circulating in the South Sulawesi Province region. The weakness of this research is that it needs to be known the exact amount of the existing budget for monitoring coronavirus mutations; only the source of the budget is known. It is hoped that the Regional Government of South Sulawesi Province will consider implementing this policy recommendation on an ongoing basis to more optimally control positive cases of COVID-19 to improve the level of public health, which can encourage the recovery of the social and economic life of the community.

ETHICS STATEMENT

Before conducting this research, this research had been approved by the Hasanuddin University Health Research Ethics Committee (HREC), with a recommendation for ethical approval number 1458/UN4.14.1/TP.01.02/2023 dated January 30, 2023. Written informed consent was obtained from all research respondents with confidentiality maintained by the researcher.

CONFLICTS OF INTEREST

The authors declare that there is no potential conflicts of interest.

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AUTHOR CONTRIBUTIONS

Sri, Balqis, Sukri, and Yahya compiled this research. Sri and Balqis contributed to the preparation of the interview guide. Sri and Stang analyzed the data. Sri, Sukri, and Indar collaborated on the theories used in this research. All authors revised the manuscript and approved the final manuscript.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this research is included in this article.

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