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ASSESMENT OF 2012 NATIONAL HEALTH SYSTEM (SKN) DETECTION AND CURATIVE RESPOND CAPABILITIES (COVID-19 CASE STUDY)

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Abstract

Covid-19 is a new emerging disease that spreads at Indonesia in 2020. The 2012 SKN as a legislative tool that applies and plays a role in health development aims to achieve the highest level of human health in Indonesia. However, the Covid-19 pandemic has proven that the health development that has been carried out has not been able to overcome the threat of the SARS-CoV-2 virus. This is evidenced by the large number of fatalities experienced by the people of Indonesia due to infection with the SARS-CoV-2 virus. The outbreak of Covid-19 was followed by large fatalities due to massive SARS-CoV-2 virus infection throughout 2020 until early 2022. The introduction of the disease that has occurred for 2 years should have been able to be anticipated by SKN through the capabilities of the SKN component regarding efforts to detect SARS-CoV-2. CoV-2 and curative efforts against Covid-19 patients. So in this study, an effort to compare the ability of the SKN response was carried out regarding detection and curative efforts in the first year of the pandemic and the second year of the pandemic. The comparison was carried out to see how the different SKN responses to the ongoing pandemic. The results are only testing indicators on detection capabilities that have good readiness (quantity refers to the standard), while other indicators such as surveillance, hospital capacity and health workers are still in an inadequate situation. So it is necessary to strengthen the SKN in an effort to anticipate the threat of a pandemic in the future.

Keywords: Covid-19; Detection, Curative

Introduction

Covid-19 (Coronavirus Disease 19) which first appeared at the end of 2019 provides many lessons for all countries in the world regarding efforts and procedures for handling cases of infection due to the SARS-CoV-2 virus (Abd El-Aziz & Stockand, 2020). Based on data as of January 20, 2022, it is known that the number of Covid-19 victims in Indonesia continues to grow to reach 144,000 people, while the number of positive confirmed cases in Indonesia reaches 4.28 million cases. The high confirmed cases and the relatively large number of victims prove that Indonesian humans are vulnerable to viral threats, especially SARS-CoV-2 (Brake et al., 2020)

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The 2012 National Health System (SKN) is a piece of legislation or regulation used in the preparation and implementation of development in the health sector to protect the entire Indonesian nation from threats and losses in the health sector(Chartier, 2014). SKN is composed of 7 subsystems including health efforts, health research and development, health financing, health human resources, pharmaceutical preparations, medical devices and food, information management and health regulation and community empowerment. The SKN component is responsible for health development so that it should be able to minimize health threats including SARS-CoV-2.

Despite the fact that the SARS-CoV-2 virus is a new emerging virus, it should be realized that initially the handling of the Covid-19 pandemic was very slow (Carlo Basile et al., 2020). The slow handling of the Covid-19 pandemic in Indonesia is due to Indonesia's low detection capability (Tawai, Suharyanto, Putranto, de Guzman, & Prastowo, 2021). Indonesia's slow detection capability is caused by several obstacles such as human resource constraints, technological capabilities and materials used in detection (PCR reagents, antigen swab kits) (Sucahya, 2020). The government is trying to respond to such a situation with various policies aimed at improving the situation of the Covid-19 pandemic in Indonesia. This situation poses a challenge to the ability of health facilities to deal with the pandemic, especially with regard to staff, stuff, structure and systems (Ayuningtyas, Haq, Utami, & Susilia, 2021)

So that when it is associated with the 2012 National Health System (SKN) it can be seen that the health effort component is a component of the SKN that should play a major role in handling the Covid-19 pandemic. In CHAPTER V on How to Implement SKN, it can be seen that the health effort subsystem also plays a role in prevention, treatment and recovery efforts (Perpres No. 72 of 2012). Based on this role, the components of the 2012 SKN health efforts should have a maximum contribution in the detection and curative function of handling the Covid-19 pandemic. The Covid-19 pandemic that has lasted for approximately two (2) years and the government's great attention which is manifested in the policy of handling the Covid-19 pandemic (Covid-19 Task Force, KPC-PEN, PPKM, PSBB, Micro PPKM, Surveillance Consortium, etc.) should be can be proven by improving the detection and curative capabilities of SARS-CoV-2 disease (Agostino, Arnaboldi, & Lema, 2021). As an effort to measure the handling of the pandemic, relevant indicators are used in efforts to handle the pandemic, such as testing, surveillance, and health instruments (WHO, 2022); (NAP, 2011).

Research Method

This study uses a qualitative research method with a case study approach. So that by using this research method, an exploration and understanding of the meaning of a case will be carried out which is a portrait of a common problem. Researchers try to carefully investigate a program, event, activity, process on a problem (Moore, Lapan, & Quartaroli, 2012). Data was obtained through purposeful content analysis conducted on policy documents (Various Presidential Regulations), programs (Crash Program), review results (Research Journal) and Covid-19 incident reports (Ayuningtyas et al., 2021) obtained

from various open source sources. Researchers present data on detection capabilities (Covid-19 testing, SARS-CoV-2 genomic surveillance) and curative capabilities (Number of Covid-19 Referral Hospital Beds and their distribution, Number of Doctors and Number of Nurses) (NAP, 2011).

In this study, researchers used the concept of Comparative Public Policy (Gupta, 2012). By definition, this approach performs comparisons or comparisons with systems, institutions and government on how, why and the impact of the policies taken. In this Covid-19 pandemic situation, researchers assume that the SKN in the first year of the pandemic and the second year of the pandemic have differences regarding the sense of crisis which is manifested in the strengthening of the SKN. So that between the two can be compared with each other regarding the achievement of the resulting policy results. Detection capability data was taken from March 2020 to February 2022. Curative capability data was taken from 2020 to 2022. Data collection did not depend on other ongoing policies, such as PPKM Level and Vaccination efforts (Luigi Jesus Basile, Carbonara, Pellegrino, & Panniello, 2023). The results obtained were then analyzed in a descriptive comparison between the first year of the pandemic and the second year of the pandemic. Based on the results of the comparison, it will be known how the value of the SKN response to the Covid-19 pandemic will be.

Result And Discusion

Based on the results obtained, it can be seen that from the detection capability and curative ability of SKN, almost all indicators still show a limited response, even though the pandemic has lasted for a relatively long time (approximately two years). Of the five indicators, only the ability to test Covid-19 has proven to be very good. The other four indicators still do not meet the standards that should be achieved (Genomic Surveillance -88%, Covid-19 Referral Hospital -14%, Number of Doctors -61% and Number of Nurses -11%) (Picture 1). Therefore, it is necessary to know what are the obstacles to each indicator. Based on the results obtained, it is known that Indonesia's Covid-19 testing response capability is very good. Indonesia's average testing capability, which was originally only 233 per day (March 2020), has increased to 266,199 specimens per day (February 2022). These results far exceed the WHO daily standard with a positivity rate of 5% (38,100 specimens / day). The result is the ability to respond to Covid-19 testing in Indonesia has reached 698% (from only 1% in the beginning). However, to meet the Indonesian daily testing standard, it takes 11 months (Considered the Positivity Rate is 5%) (Kawalcovid19, 2022).

However, if examined further, actually in the course of time since the beginning of Covid-19 in March 2020, Indonesia's positivity rate tends to fluctuate around (0-30%) (Sucahya, 2020). Whereas with the positivity rate at 5-15%, the testing capacity should increase to 5:1000 people/week (Kepmenkes No. HK.01.07/MENKES/4641/2021). This value has implications for the standard of people being tested per day reaching 190,500 people. Indonesia's daily positivity rate reaches 20-30%, when the delta variant enters Indonesia since July 2021 (Kawalcovid19, 2022). The increase in the positivity rate was

followed by a significant increase in the number of people being tested in Indonesia since July 2021 (July 22 reached 228,702 people tested).

As an indicator that represents the component of the Health Effort in the SKN, the capacity for testing Covid-19 is hampered by the lack of facilities that can carry out testing activities. After the discovery of two cases of Covid-19 in Depok City, West Java, the spread of the SARS-CoV-2 virus was very fast. This situation is not followed by response capabilities, where only the Balitbangkes (Health Research and Development Agency) of the Ministry of Health has the only facility to examine Covid-19 samples (Real Time PCR) (Hendarwan et al., 2020). This proved difficult because in addition to the limited testing capacity of the Ministry of Health's Balitbangkes, the number of incoming samples was also very large, resulting in a delay in national testing capabilities.

As a proactive step, the government established a network of Covid-19 examination laboratories at the provincial level. (HK.01.07/MENKES/9847/2020 concerning the 2019 Coronavirus Disease (COVID-19) Examination Laboratory Network) It is hoped that this policy will be able to gradually increase the national testing capacity, adjusted to the threshold positivity rate. In the early stages, through the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/Menkes/214/2020 and HK.01.07/MENKES/405/2020, the division of laboratories, namely reference laboratories and examining laboratories. In the early stages, based on the Decree of the Minister of Health, there were 44 each and increased to 163 examining laboratories, so that within 3-5 months since the decision was made, there was an increase in testing capacity to a maximum of 30,000 samples per day.

Another obstacle that causes the slowness of Covid-19 testing capabilities is the availability of reagents (for PCR tests), the limited number of qPCR tools and the lack of human resources. Regarding the availability of Real Time PCR reagents and tools, at the beginning of the Covid-19 pandemic, Indonesia only had 44 diagnostic laboratories for examiners and surveillance (regional health laboratories under the province). Of the total number of labs, only 38 Real Time PCR machines and six (6) conventional PCR machines are available. This number is analogously unable to meet the national testing standards (the average of one machine is 96 samples in one reaction) so additional instruments are needed. The following instruments with additional reagents (eg RT-ase enzyme) can only be fulfilled through imports from abroad. When referring to purely national testing capabilities with strengths coming from the network of provincial health offices and regional health laboratories, it can be seen that in total (surveillance and non-surveillance laboratories) have a maximum capacity of 13,272 testing per day (after three months of the first case declaration) (Organization, 2013). However, from the total Covid-19 testing capacity (qPCR) there were several provinces at the beginning of the pandemic that did not have diagnostic laboratory facilities. Some of these areas are Bengkulu, Lampung, NTT, Central Kalimantan, East Kalimantan, North Kalimantan, Central Sulawesi, Southeast Sulawesi, Gorontalo, West Sulawesi, North Maluku and West Papua. This situation forced the government through the Covid-19 Task Force to initiate efforts to fulfill the need for independent testing with the TFRIC-19 project. This consortium is

trying to produce PCR kits and TCM Kits (Molecular Rapid Tests) in order to further increase the national testing capacity (Dinar, 2022).

Surveillance in general and genomic surveillance in particular are problem-solving approaches that are commonly used and carried out in dealing with the threat of disease caused by Biological Hazardous Materials. GISAID Epicov Coronavirus SARS-CoV-2 databases are a platform used to analyze and map Surveillance (genomic) data about Covid-19 in the world (Khare et al., 2021). The GISAID platform was previously used as a tool to analyze the outbreak of avian influenza (Avian Influenza) virus (Baek et al., 2021). In order to monitor Covid-19 cases in the world, most countries will report data on Covid-19 findings in their countries through genomic surveillance on this platform (GISAID), Indonesia is no exception (Baek et al., 2021). Indonesia through the national consortium of genomic surveillance initiated by the Ministry of Health, BPPT and Research and Technology/Dikti routinely reports the results of genomic surveillance as a representation of cases that occur in Indonesia. As of February 28, 2022, it is known that Indonesia has reported a total of 20,531 genomic sequences (Chavan & Shinde, n.d.).

The genomic surveillance that has been carried out by the national consortium represents the ability in terms of management, information and health resources. Similar to testing capacity, WHO sets surveillance standards that need to be carried out. The WHO standard in genomic surveillance is 5% of the total positive confirmed cases that have occurred (Brito et al., 2021). If as of February 28, the number of Covid-19 cases in Indonesia reached 5,564,448 cases, then the number of reported genomic sequences should have reached 278,222 sequences. Based on this, it can be seen that the surveillance capability, especially genomic surveillance in Indonesia is still lacking (Indonesia only has 20,531 sequences as of February 28, 2022). Genomic surveillance is very useful as input in determining Covid-19 policies. Genomic surveillance provides important information regarding tracking the evolution and distribution of viruses, efforts to optimize molecular tests, treatments and guidelines in public health responses (Ling-Hu, Rios-Guzman, Lorenzo-Redondo, Ozer, & Hultquist, 2022).

Indonesia is not the only country that lacks in genomic surveillance efforts. Many other countries such as in Latin America have minimal genomic surveillance capabilities even though the number of positive confirmed cases in these countries is in large numbers (0.5% of the total positive cases)(Cahyani et al., 2022). In general, based on genomic surveillance data in the first year of the pandemic (March 2020-February 2021), the number of sequences recorded on GISAID is 2158 sequences. The standard number of sequences that should be uploaded is 5% of the total positive confirmation cases (1,334,620 Positive Confirmation Cases) which is 66,731 sequences. So the percentage of Indonesia's genomic surveillance capability in the first year is 3.2%. In the last year (March 2021-February 2022) the number of Indonesian sequences uploaded to the GISAID database was 18,373 sequences. The standard data that should be uploaded in the database is 211,491 sequences (Of the total confirmed cases, it is 4,229,820 cases). So the comparison between the uploaded data and the standard is 8.7%. So the difference in capacity between the first year and the second year is 5.5% (94.5% of the target). The

lack of genomic surveillance capabilities that can be carried out by several countries is caused by several factors. These factors include the technology needed for genomic surveillance, which is advanced molecular biology technology which is not controlled by many health resources. In addition, one-time sequencing requires a device that has a high cost (Wilkinson et al., 2021). This weakness needs to be addressed by Indonesia to anticipate the threat of a pandemic that may occur in the future.

The bed capacity of the Covid-19 referral hospital as a representation of the second assessment of the health effort component, is in an improving situation (originally the response was only 44% increasing to 86%). Quantitatively, the number of Covid-19 referral hospitals has increased by seven times compared to the initial period of the pandemic. The ability of Covid-19 referral hospitals at the beginning of the pandemic era in Indonesia was marked by the issuance of the Decree of the Minister of Health of the Republic of Indonesia No. 169 of 2020. In the early era of the Covid-19 pandemic in Indonesia, the number of hospitals that became referrals was 132 hospitals. Until now, the number of Covid-19 referral hospitals has reached 839 hospitals. However, in addition to increasing the number of Covid-19 referral hospitals, it is also necessary to appreciate the government's efforts to increase the number of available beds to anticipate the worst threat of Covid-19. Initially it was only around 57,000 beds, then it was increased to 83,000 and 102,000 specifically for people with emerging Covid-19 infections (Persi, 2021). The increase in the number of hospital beds and special beds for Covid-19 sufferers is increasingly happening when the delta variant of Covid-19 spreads in Indonesia in June-December 2021. This number can continue to increase with the operation of field hospitals (BPBD, TNI and Polri) intended for patients who have mild symptoms. However, from April 2020 to February 2022, the number of these health facilities has never reached the target desired by WHO and Persi. In addition to this, a phenomenon that needs to be considered in this indicator is that the concentration of Covid-19 referral hospitals in Indonesia is still mostly centered on the island of Java **(Picture 2)**. This situation proves that there is a gap between health facilities in Java and outside Java. This situation causes a phenomenon when there are hospitals that are not Covid-19 referrals (do not have Covid-19 standardization) forced to accept Covid-19 patients due to the lack of available beds in an area (Prajogo et al 2021). The domino effect of the imbalance between health facilities on the island of Java and outside Java can provide a risk of silent Covid-19 and the number of cases that are not detected. The number of undetected cases will create confusion in policy making regarding the handling of infectious diseases, preventive efforts and epidemiological suspicions as well as estimates of the detailed needs of medical devices compiled by the taskforce (Covdi-19 Task Force).

Based on the comparison of Covid-19 case reports outside Java Island in February 2022 and January 2022, it is known that initially only 40-100 cases of Covid-19 outside Java were detected per day but increased significantly to thousands of cases thereby increasing the BOR (Bed Occupacy Rate). from 2-5% to 20-40% (Suwartawan & Ariani, 2022). The researcher describes the situation as a condition that may lead to a wide audience asking, is the small number of confirmed cases supported by good testing

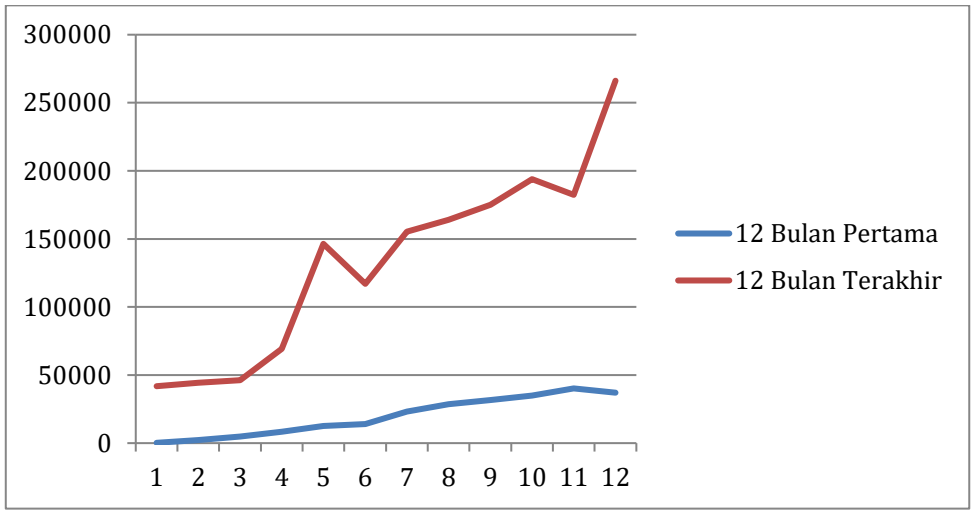
capacity? And indeed, if it is good, is the capacity of health facilities (number of Covid-19 referral hospitals) available? So in this case, it is necessary to distribute health facilities such as testing facilities and hospitals (Covid-19 referral hospitals) so that silent Covid-19 incidents do not occur outside Java. This is because humans have the same vulnerability to BHM threats. The issue of equitable distribution of health development has long been an open secret in Indonesia. The reason is the centralization of population distribution which is concentrated on the island of Java.

Doctors and nurses are the most vital professions in handling the Covid-19 pandemic emergency, therefore a standard (minimum number) of doctors and nurses is needed for a country. The number of doctors and nurses is adjusted to the number of residents in a country. Based on WHO standards, the minimum number of doctors is 1:1000 population, so for Indonesia it takes approximately 273,000 doctors to serve 273 million Indonesians (Kumar and Pal, 2018). The geographical condition of Indonesia in the form of an archipelago is a challenge for the country to have a balanced distribution. Based on (Picture 3) the number of doctors owned by Indonesia both before and after the pandemic is still less than the standard set by WHO. Due to the shortage and imbalance in the number of workers in the health sector (especially doctors and nurses), Indonesia is reported to have burnout cases due to the limited number of replacement workers (Dianto et al, 2021). Burnout is an event where health workers experience a state of emotional, mental, physical exhaustion due to excessive and prolonged stress (Haryanto, 1996). Reports of burnout occur not only in areas that have a minimal number of health workers but also in areas that have a larger proportion of health workers.

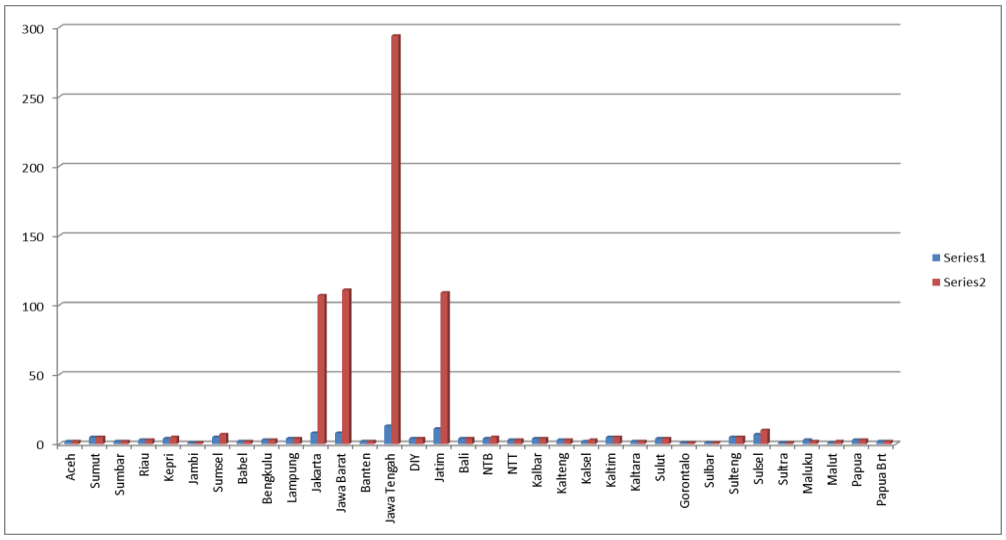
In overcoming the burnout situation that occurred during the Covid-19 pandemic (in 2020 and mid 2021), the Minister of Health and the Minister of Education tried to increase the number of health workers by accelerating doctors and nurses who had passed the competency test so that they could quickly carry out practice (Kemendikbud) , 2021). The results, based on the data obtained, show that the number of doctors and nurses in Indonesia who practice increased by 9% (number of doctors) and 19% (number of nurses). To achieve the minimum WHO standard, the medical profession still has a large deficit (61%) but nurses have a better condition with a remaining deficit of 11%.

Picture 1
Assesment of Health Capacity Indicator Represents SKN's

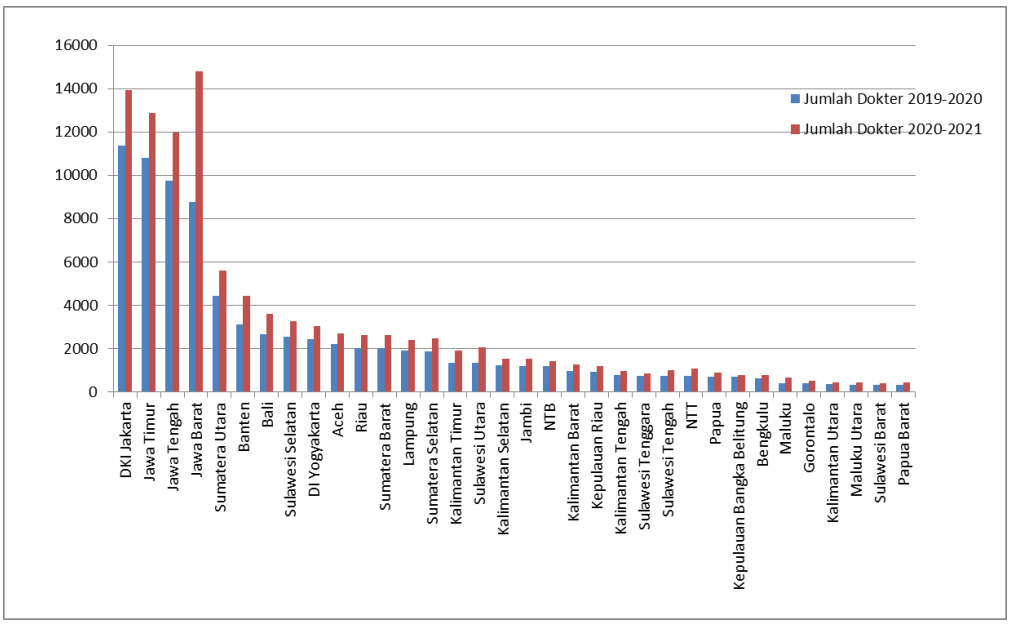
Number	Type of Capacity	Indicator	Standart	Capacity		Score (%)		Gap (b-a)	Gap To Standart
				Start (a)	Final (b)	Start (a)	Final (b)		
1	Detection Capacity	Testing Covid-19	38.100/Hari	233	266.199	1 %	699 %	+698 %	0
		Surveillans Genomik	66.731 278.222	2.158	18.373	3,2 %	12, 6 %	+9,4 %	-88 %
2	Curative Capacity	Jumlah Tempat Tidur RS Rujukan Covid-19	130.000	57.000	111.890	44 %	86 %	+42 %	-14 %
		Jumlah Dokter	273.000	81.011	106.316	30 %	39 %	+9%	-61%
		Jumlah Perawat	492.948	345.508	438.234	70 %	89 %	+19 %	-11%



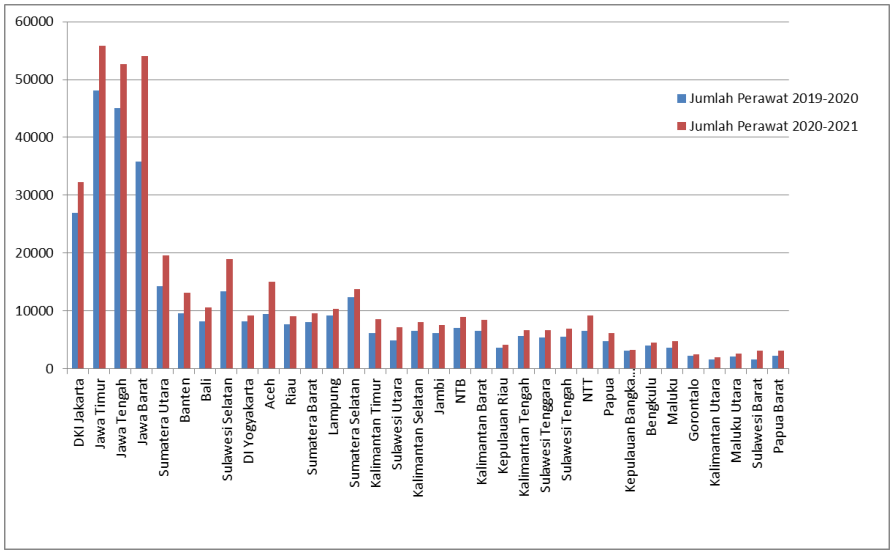
Picture 2. Covid-19 Testing Capacity First Year (12 Bulan Pertama) and Second Year (12 Bulan Terakhir)



Picture 3. Covid-19 Hospital Reference Each Provinces



Picture 4. Doctor and Nurse Amount Each Provinces



Conclusion

It can be seen that the value of SKN's response ability to Covid-19 is still not optimal. Of the five indicators that represent detection and curative capabilities, only the testing indicator has a very good value. Meanwhile, surveillance capabilities, health facilities and health workers are still very vulnerable to face the manifestation of the threat of a pandemic in the future. So it is important for the Government and all related institutions to make health as a whole issue. Health development is not only the responsibility of the Ministry of Health but the responsibility of all relevant stakeholders including the community.

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