

Assessment of Transmitted Disease Service Readiness in 12 Puskesmas Before and During The COVID-19 Pandemic (Application of The Concept of Service Availability and Readiness Assessment)

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Abstract

Puskesmas must be a reliable health service, so paying attention to its readiness to provide health efforts for the community is necessary. This research aims to compare the readiness of Puskesmas in providing services for infectious diseases of HIV/AIDS, TB, Malaria, and STIs before the pandemic (2019) and during the COVID-19 pandemic (2021). This research was conducted in August-September 2021 in 12 health centers in Papua, NTT, South Sumatra, and DIY provinces. Data before the pandemic was obtained from Rifaskes 2019, and during the pandemic, it was collected through direct data collection in the field. The data collection tool is in the form of a questionnaire with an adaptation of the Service Availability and Readiness Assessment (SARA). SARA guides the analysis to produce domain values and traceability indicators of the availability and readiness of health services. Data were also analyzed by statistical calculation of wilcoxon-signed-rank t-test (non-parametric dependent T-test). The results showed that the average tracking indicator that had decreased was malaria services (9.4%). Meanwhile, the average of other traceability indicators has increased, such as HIV/AIDS services (6.9%), tuberculosis (9.3%), and STIs (8.3%). The results of the Wilcoxon test showed that there was no significant difference in service readiness for malaria ($p=0,144$), tuberculosis ($p=0,533$), and STIs ($p=0,227$); while the readiness of HIV/AIDS services showed a significant difference ($p=0.046$). The government can use SARA as a basis for monitoring the availability and readiness of services by adapting several tracking variables that are more in line with the Indonesian context.

Keywords

Service Availability and Readiness Assessment (SARA), Malaria, HIV/AIDS, Tuberculosis, Sexually Transmitted Infections

1. Introduction

Since being declared a pandemic by the World Health Organization (WHO) on March 11, 2020, efforts to prevent transmission and slow the rate of new infections have been the main goals of handling Covid-19 cases.¹ Since it was announced as a pandemic, this infection has continued to spread throughout the world, including Indonesia. COVID-19 cases have spread to all provinces in Indonesia, and to date (update February 8, 2022), there are 4,580,093 confirmed cases of COVID-19, with 233,062 active cases and 144,719 deaths.²

As the front line in primary health care, Puskesmas must have a solid system to provide quality responses to public emergencies. With the readiness of health services at the Puskesmas, it is hoped that it will significantly reduce morbidity and mortality in the community. Therefore, Puskesmas must become a mainstay health service facility in various situations, both before the outbreak and when facing emergencies such as the Covid-19 outbreak.³ The provision of quality health services cannot be separated from the need for the readiness of these service facilities in providing health efforts for the community.

In collaboration with the World Health Organization (WHO) - the United States Agency for International Development (USAID) has produced a Service Availability Readiness Assessment (SARA) methodology. This methodology builds on previous and current approaches to assess health care delivery facilities. This survey will provide information regarding the availability of critical resources and infrastructure and the readiness of health facilities to provide primary health care interventions.⁴ One of the health services can be assessed by SARA is services for infectious diseases, namely HIV/AIDS, TB, Malaria, and Sexually Transmitted Infections (STI).

At this time, the COVID-19 pandemic will more or less affect the readiness of health services at the Puskesmas. The results of research in Indonesia show that this pandemic is affecting health services at Puskesmas both in terms of services and existing health facilities.^{5,6} The results of another study in India in 2020 showed that there were obstacles in the function of health services in primary health services during the COVID-19 pandemic. This will contribute to patient safety and sub-optimal disease control.⁷ The same was shown in a study in Spain in 2022 that compared health services from 2017-2020. The country's COVID-19 treatment priorities changed the scheduled doctor-patient face-to-face visits for chronic disease detection and monitoring, which was down by almost 41%.⁸

The COVID-19 pandemic that has occurred worldwide has impacted the readiness of health services, including primary health services, namely Puskesmas. This research aims to compare the readiness of Puskesmas to provide services for HIV/AIDS, TB, Malaria, and Sexually Transmitted Infections before and during the COVID-19 pandemic.

2. Literature Review

The Service Availability and Readiness Assessment (SARA) is a health facility assessment tool designed to assess and monitor the service availability and readiness of the health sector and to generate evidence to support the planning and managing of a health system. The survey objective is to generate reliable and regular information on service delivery (such as the availability of key human and infrastructure resources), on the availability of basic equipment, basic amenities, essential medicines, and diagnostic capacities, and on the readiness of health facilities to provide basic health-care interventions relating to family planning, child health services, basic and comprehensive emergency obstetric care, HIV, TB, malaria, and non-communicable diseases.⁴

In 2019, NIHRD had major research, namely Health Facilities Research (Rifaskes). Rifaskes was aimed at obtaining recommendations for strengthening the achievement of universal health coverage and improving the implementation of Jaminan Kesehatan Nasional (JKN). JKN is that every citizen must receive comprehensive health services, ranging from promotive, preventive, curative, rehabilitative, to palliative according to their needs and there must be no financial or cost constraints in utilizing these services. To meet these, in terms of supply, health service facilities must be available. That is why SARA is needed to measure the availability and readiness of the health system to achieve universal health coverage.

3. Methods

This research was conducted in August-September 2021 at 12 health centers in 4 provinces, namely Papua, NTT, South Sumatra, and DIY.⁹ The selection of study locations was carried out purposively by taking into account the representation of the western and eastern parts of Indonesia. The selection of Puskesmas as the place of data collection was carried out purposively by considering urban or rural locations (except for Puskesmas in Yogyakarta City, which was selected randomly) so that the following data collection locations were selected:

1. Jayapura District: Sentani, Dosay, and Ebungfauw Community Health Centers
2. Southwest Sumba District: Panenggo Ede, Tena Teke, and Wutu Kawula Community Health Centers
3. Ogan Komering Ilir (OKI) District: Pedamaran, Celikah, and Pematang Panggang III Public Health Centers
4. Yogyakarta City: Gondokusuman I, Tegalrejo, Mantrijeron Public Health Centers

Data before the pandemic was obtained from the 2019 Health Facilities Research (Rifaskes 2019), which is research related to health care facilities.¹⁰ Rifaskes was implemented by the Ministry of Health (Badan Litbangkes) in 2019 throughout Indonesia. Meanwhile, data during the pandemic was collected through direct data collection in the field. The data collection tool is a research questionnaire adapted from the Service

Availability and Readiness Assessment (SARA) instrument. The collected data is then entered and cleaned, and processed. The analysis is carried out based on the SARA analysis to generate domain values and traceability indicators of the availability and readiness of health services. Furthermore, the data were analyzed by statistical calculations using the Wilcoxon sign rank t-test (non-parametric from the dependent T-test) to compare services at 12 Puskesmas before and during the pandemic.

5. Results and Discussion

Seeing the readiness of health services with the SARA method is a comprehensive approach to assessing and monitoring the availability of health services and the readiness of facilities with standard indicators covering all major programs.¹¹This method can show disparities in the availability and readiness of all major health programs in health facilities¹²including infectious disease services. Infectious disease services that become the standard for Puskesmas readiness in SARA are malaria, tuberculosis, HIV/AIDS, and STIs.

5.1 Malaria Service

The average malaria service at the Puskesmas Ogan Komeri Ilir Regency and Jayapura Regency has decreased, while for the City of Yogya and Southwest Sumba Regency, the average value has increased. Tracking indicators for the administration of primaquine tablets decreased for all Puskesmas. Meanwhile, the indicator for tracing the malaria thin blood smear and rapid malaria diagnostic test did not experience a decrease in average, there was no increase, or in some Puskesmas, there was an increase (Table 1).

Table 1. Average percentage of malaria service tracking indicators before and during the pandemic at the study site health centers by district/city

No	Tracer indicator	Ogan Komeri Ilir District		Yogyakarta City		Southwest Sumba District		Jayapura District		Average	
		2019	2021	2019	2021	2019	2021	2019	2021	2019	2021
1	Malaria thick blood smear	33.3%	33.3%	66.7%	100%	66.7%	33.3%	100%	100%	66.7%	66.7%
2	Malaria thin blood smear examination	33.3%	33.3%	100%	100%	66.7%	66.7%	100%	100%	75.0%	75.0%
3	Rapid diagnosis of malaria test	66.7%	66.7%	33.3%	33.3%	66.7%	100%	100%	100%	66.7%	75.0%
4	Artemisinin injection	0%	0%	0%	0%	0%	0%	66.7%	33.3%	16.7%	8.3%
5	Artemisinin tablets	0%	0%	0%	0%	0%	33.3%	100%	33.3%	25.0%	16.7%
6	Quinine/Kinin tablet/inj	0%	0%	0%	0%	33.3%	33.3%	100%	0%	33.3%	8.3%
7	Combined Malaria Drug (FDC)	33.3%	33.3%	0%	0%	0%	66.7%	66.7%	33.3%	25.0%	33.3%
8	Primaquine tablets	100%	0%	0%	0%	100%	33.3%	100%	66.7%	75.0%	25.0%
Average		33.3%	20.8%	25.0%	29.2%	41.7%	45.8%	91.7%	58.3%	47.9%	38.5%

Based on the results of the Wilcoxon test on the readiness of Puskesmas in malaria services, it showed that seven Puskesmas experienced a decrease in the domain value in 2021 compared to 2019, 2 Puskesmas experienced an increase, and three Puskesmas had a fixed domain value. In terms of the average, the test results show no significant difference between the domain means in 2021 compared to 2019, with $p = 0.144$. The malaria readiness domain is based on an assessment of 8 traceability indicators, namely the training in malaria diagnosis and therapy in the previous two years, the presence of a rapid malaria test, the ability to perform a thick blood smear, the ability to perform a thin blood smear, the presence of injection artemisinin, the presence of quinine, primaquine, and combination malaria drugs. Three tracking variables have increased, namely training on malaria diagnosis

and therapy, availability of malaria rapid tests, and combination malaria drugs; 3 tracking variables decreased, namely injection of artemisinin, quinine, and primaquine; and two tracking variables under the same conditions, namely the ability to examine a thick blood smear, the ability to examine a thin blood smear.

Fever and respiratory problems in malaria cases are symptoms also found in COVID-19 patients.¹³ Often patients with fever who are then tested for malaria and show negative results turn out to be infected with COVID-19 or vice versa. Based on laboratory confirmation, there are patients with asymptomatic malaria and COVID-19. This condition increases the possibility of the transmission pattern of the two diseases.^{14,15} Undetected cases of malaria and COVID-19 can pose direct health challenges for individuals and broadly impact public health. Laboratory tests are the definitive way to diagnose infectious diseases. Therefore, it is highly recommended to include malaria RDTs in routine diagnosis for COVID-19 in malaria-endemic areas to eliminate misdiagnosis between malaria and COVID-19, which results in medication errors. The patient's course and medical history should also be considered when screening for COVID-19, especially in malaria-endemic areas.¹⁶

During the COVID-19 pandemic, The Ministry of Health issued a malaria service protocol during the 2019 Coronavirus disease pandemic through letter Number PV.01.02/IV/5801/2020 dated April 23, 2020, which was submitted by the Director of P2P to all Heads of Provincial and District/City Health Offices in Indonesia.¹⁷ Broadly speaking, the protocol contains that malaria services will continue to be implemented by observing and implementing health protocols. In practice, a pdirect response to COVID-19 must be integrated with malaria control efforts. Access to malaria services must work. Malaria control, such as the distribution of insecticide-treated bed nets, must still be carried out, as well as surveillance activities about the use of PPE by the COVID-19 transmission prevention protocol.¹⁸

Currently, the Indonesian population lives in malaria-free areas. However, some areas in Indonesia are still endemic to malaria, and most are in the eastern part of Indonesia.¹⁹The results showed a general decline in malaria services at Puskesmas before and during the COVID-19 pandemic. Of the eight trace indicators for thick and thin blood smears, malaria did not increase or decrease, while the rapid diagnosis of malaria tests and combined malaria drugs (FDC) increased. Artemisin injection and tablets, as well as quinine and primaquine tablets, decreased.

The implementation of malaria services at the Puskesmas is an effort malaria control through prevention, control, and eradication activities which include health promotion, health surveillance, risk factor control, case finding, and case handling.¹⁹

5.2 Tuberculosis (TB) Services

In contrast to the readiness of the Puskesmas in malaria services, in terms of the readiness of the Puskesmas in handling tuberculosis, it showed an increase, where five Puskesmas experienced a decrease in the domain value in 2021 compared to 2019, and 6 Puskesmas experienced an increase. One Puskesmas had a fixed domain value. However, the test results also show no significant difference between the domain means in 2021 and 2019, with $p = 0.533$. Three tracking variables have decreased, namely HR trained in tuberculosis diagnosis and management and HR training in MDR TB management, and the availability of ethambutol tablets; 4 tracking variables have increased, namely guidelines for diagnosis and treatment of tuberculosis, availability of Xpert TB examination, availability of tuberculin test (Mantoux test), and the presence of isoniazid drug; 4 tracking variables did not increase or decrease, namely the presence of MDR-TB management guidelines, gram staining, availability of Isoniazid+Rifampicin+Pyrazinamide+Ethambutol tablets, and availability of BCG vaccine. Availability of Isoniazid+Rifampicin+Pyrazinamide+Ethambutol tablets and availability of BCG vaccine. Three tracking variables have decreased, namely HR trained in tuberculosis diagnosis and management and HR training in MDR TB management, and the availability of ethambutol tablets; 4 tracking variables have increased, namely guidelines for diagnosis and treatment of tuberculosis, availability of Xpert TB examination, availability of tuberculin test (Mantoux test), and the presence of isoniazid drug; 4 tracking variables did not increase or decrease, namely the presence of MDR-TB management guidelines, gram staining, availability of Isoniazid+Rifampicin+Pyrazinamide+Ethambutol tablets, and availability of BCG vaccine. Availability of Isoniazid+Rifampicin+Pyrazinamide+Ethambutol tablets and availability of BCG vaccine.

Table 2. Average percentage of tuberculosis service tracking indicators before and during the pandemic at the study site health centers by district/city

No	Tracer indicator	Ogan Komering Ilir District		Yogyakarta City		Southwest Sumba District		Jayapura District		Average	
		2019	2021	2019	2021	2019	2021	2019	2021	2019	2021
1	TB diagnosis and management guidelines	33.3%	100%	66.7%	66.7%	0%	66.7%	66.7%	100%	41.7%	83.4%
2	MDR-TB Management Guidelines	33.3%	100%	66.7%	66.7%	0%	0%	66.7%	0%	41.7%	41.7%
3	Tuberculin/mantoux test	0%	66.7%	66.7%	66.7%	0%	33.3%	33.3%	100%	25.0%	66.7%
4	TB drug Ethambutol tablets	0%	66.7%	66.7%	0%	33.3%	66.7%	33.3%	33.3%	33.3%	41.7%
5	TB drug Isoniazid + Ethambutol tablets	0%	33.3%	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	33.3%	41.7%
6	TB drug Isoniazid + Rifampicin tablets	0%	33.3%	33.3%	33.3%	100%	33.3%	66.7%	66.7%	50.0%	41.7%
7	TB drug Isoniazid tablets	0%	0%	66.7%	100%	66.7%	33.3%	66.7%	100%	50.0%	58.3%
8	TB drug Isoniazid + Rifampicin + Pyrazinamide tablets	0%	33.3%	66.7%	33.3%	100%	33.3%	66.7%	66.7%	58.4%	41.7%
9	TB drug Isoniazid + Rifampicin + Pyrazinamide + Ethambutol tablets	0%	66.7%	66.7%	66.7%	100%	33.3%	66.7%	66.7%	58.4%	58.4%
Average		7.4%	55.6%	59.3%	51.9%	48.1%	37.0%	59.3%	66.7%	43.5%	52.8%

The average percentage of tuberculosis services in the Yogya and Southwest Sumba districts has decreased, while the Ogan Komering Ilir and Jayapura districts have increased. Tracking indicators that are increasing in all districts are guidelines for diagnosing and managing tuberculosis (Table 2).

Tuberculosis is still a problem that needs attention in Indonesia. The implementation of TB screening has experienced difficulties because one of the efforts to prevent the transmission of COVID-19 is the policy of physical distancing. This policy causes the usual TB case-finding activities to be hampered.²⁰ The government is launching a TB elimination program in 2030 with the slogan Find, Treat, Until Heal (TOSS TBC). The TB control program is also coordinated with other ministries to accelerate the elimination program. The results of this study indicate that the traceability indicator will increase from 43.5% to 52.8% in 2021. The traceability indicator decreases in the administration of the TB drug Isoniazid + Rifampicin + Pyrazinamide tablets in the city of Yogya. Meanwhile, in Sumba Barat Daya Regency, all traceability indicators related to drugs decreased, except for ethambutol tablets. For people with TB, regularity in taking medication is essential. The results of a study conducted in the Kendari city area showed that the knowledge and role of TB treatment health workers affected adherence to taking OAT at the Puskesmas.²¹

Studies in Brazil show that differences in infrastructure between regions affect the achievement of tuberculosis program outcomes. Different perspectives of tuberculosis control can be influenced by the infrastructure of facilities and services offered to users by public health services. In this context, infrastructure refers to several facilities where services are provided to users, including all buildings and other physical facilities, equipment, and human resources.²²

O'Neill et al. 2013 found that the availability of tuberculosis drugs (isoniazid, rifampicin, ethambutol, and pyrazinamide) also differed in the countries of death. The drugs are widely available in Cambodia (84%) and the

United Republic of Tanzania (74%) but not in Burkina Faso, where availability is deficient (39%). In addition, about a third of the facilities offering tuberculosis services do not have trained staff or guidelines.¹¹

Another study in Nigeria revealed several gaps in the readiness of TB care delivery facilities' general and specific tuberculosis services. This condition varies according to geographic location, type, and ownership of health facilities. Some facilities are considered inadequate to support quality services, including poor power supply, inadequate water and soap, and poor privacy during consultations. It is also an occupational risk for health workers and contributes to nosocomial infections in patients. Substandard infection control measures contribute to prognosis, risk of transmission to health care workers, their families, and drug-resistant strains of TB. In addition, there are problems regarding the availability of human health resources. Nearly half the facilities have only one or two officers. Only a quarter of the facilities at the research sites have Xpert MTB/RIF, and some DOT centers do not have laboratories. Another important finding of this study is the unavailability of stock of medicines.²³

5.3 HIV/AIDS and Sexually Transmitted Infections Services

The average percentage of HIV/AIDS services tends to increase, except for the city of Yogyakarta, which has decreased. The decline in the mean in the City of Yogya occurred in the HIV/AIDS service tracking indicators and guidelines. The increase in the average tracking indicator occurred in the HIV Rapid HIV diagnosis test tool in all Puskesmas to 100%, where it had not been done before, or 0% (Table 3).

Table 3. Average percentage of HIV/AIDS service tracking indicators before and during the pandemic at the study location health centers by district/city

No	Tracer indicator	Ogan Komering Ilir District		Yogyakarta City		Southwest Sumba District		Jayapura District		Average	
		2019	2021	2019	2021	2019	2019	2019	2021	2019	2021
1	Providing HIV-AIDS services	100%	100%	100%	66.7%	100%	100%	66.7%	100%	91.7%	91.7%
2	Guidelines for the management of HIV/AIDS opportunistic infections	66.7%	100%	100%	33.3%	33.3%	33.3%	100%	100%	75.0%	66.7%
3	HIV/AIDS Counseling and Testing Guidelines	66.7%	100%	100%	33.3%	66.7%	66.7%	100%	100%	83.4%	75.0%
4	Guidelines for the prevention of mother-to-child transmission of HIV/AIDS	66.7%	100%	33.3%	0%	66.7%	33.3%	100%	100%	66.7%	58.3%
5	Zidovudine tablets for HIV	0%	0%	33.3%	33.3%	0%	0%	33.3%	66.7%	16.7%	25.0%
6	Zidovudine + Lamivudine tablets for HIV	0%	0%	66.7%	66.7%	0%	0%	66.7%	66.7%	33.4%	33.4%
7	HIV drug Zidovudine + lamivudine tablets + Nevirapine	0%	0%	33.3%	33.3%	0%	0%	0%	66.7%	8.3%	25.0%
8	HIV drug Nevirapine	33.3%	0%	66.7%	66.7%	0%	0%	66.7%	66.7%	41.7%	33.4%
9	HIV drug Lamivudine	0%	0%	66.7%	66.7%	0%	0%	66.7%	66.7%	33.4%	33.4%
10	CD4 HIV Tool	0%	0%	0%	0%	0%	0%	66.7%	33.3%	16.7%	8.3%
11	CD8 HIV kit	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0.0%

12	HIV Rapid HIV diagnostic test tool	0%	100%	0%	100%	0%	100%	0%	100%	0.0%	100.0%
Average		27.8%	41.7%	50.0%	41.7%	22.2%	27.8%	55.6%	72.2%	38.9%	45.8%

The average percentage of sexually transmitted infection (STI) services in Ogan Komering Ilir and Southwest Sumba districts has increased. Traceability indicators that decreased were the administration of cefixime tablets in the city of Yogya and the administration of procaine penicillin injection in the district of Ogan Komering Ilir. (Table 4)

Table 4. Average percentage of the presence of sexually transmitted infection (STI) service tracking indicators before and during the pandemic at the study site health centers by district/city

No	Tracer indicator	Ogan Komering Ilir District		Yogyakarta City		Southwest Sumba District		Jayapura District		Average	
		2019	2021	2019	2021	2019	2021	2019	2021	2019	2021
1	STI Diagnosis	33.3%	100%	100%	100%	66.7%	100%	100%	100%	75.0%	100%
2	STI Treatment	33.3%	100%	100%	100%	66.7%	100%	100%	100%	75.0%	100%
3	STI Diagnosis and Management Guidelines	66.7%	66.7%	33.3%	66.7%	0%	33.3%	100%	100%	50.0%	66.7%
4	Ceftriaxone tablets	0%	0%	0%	0%	0%	0%	0%	0%	0.0%	0%
5	Cefixime tablets	0%	0%	66.7%	33.3%	0%	33.3%	100%	100%	41.7%	41.7%
6	Injectable procaine penicillin	66.7%	0%	0%	0%	0%	0%	33.3%	33.3%	25.0%	8.3%
7	Ampicillin injection	0%	33.3%	0%	0%	0%	0%	33.3%	33.3%	8.3%	16.7%
Average		28.6%	42.9%	42.9%	42.9%	19.1%	38.1%	66.7%	66.7%	39.3%	47.6%

According to O'Neill et al., 2013, PMTCT services are relatively new and are offered by many facilities in Burkina Faso, Cambodia, and the Republic of Tanzania. Training and guidelines are generally available in the facilities that offer services during antenatal care, but drugs (Nevirapine or zidovudine) and diagnostic tests (rapid or other tests) are not available. This lowers the overall readiness score to under 25%. In Zambia, the proportion of facilities offering PMTCT services increased from 50% in 2008 to 66% in 2010. Readiness to provide PMTCT services has also increased. The percentage of facilities with all tracking items for PMTCT services increased from 33% in 2008 to 56% in 2010, while the average readiness score increased from 71% to 83%.¹¹

The results of this study show that the average tracking indicator for STI disease has increased from 39.3% to 47.6% in 2021. Experience in Nepal found that almost three quarters (73.8%) and less than one-tenth (5.9%) of health facilities reported providing STI and HTC services. STI and HTC's average service readiness scores were 26.2% and 68.9%, respectively. STI and HIV Testing and Counseling (HTC) service readiness scores vary significantly according to the management authority (private and public). Interestingly, health facilities with external supervision had better service readiness scores for STI services and were nearly four points higher than those without external supervision. Unlike IMS services, facility readiness to provide HTC services is higher²⁴ Especially for health services related to HIV/AIDS and STIs, it is necessary to support post-test counseling in order to deal with surprises in the diagnosis results and to make a careful framework of health messages to support treatment for patients.²⁵

5.4 The Readiness Conditions in Health Centers

Tests were carried out to assess changes that occurred between the readiness conditions of the Puskesmas in providing infectious disease services (Malaria, tuberculosis, HIV-AIDS, and sexually transmitted infections) in 2019 (based on the results of Rifaskes 2019) and conditions in 2021. The health centers are Watukawula, Penenggo Ede, and Tena Teke (West Sumba Regency, East Nusa Tenggara Province), Pedamaran Health Center, Pematang Panggang III, Kayu Agung (Ogan Komering Ilir Regency, South Sumatra Province), Tegalrejo Health Center, Mantrijeron, Gondokusuman I (City Yogyakarta, Special Region of Yogyakarta), and Dosay, Sentani, and Ebuyngfauw Health Centers (Jayapura City, Papua Province).

Table 5. Wilcoxon test results on the readiness conditions of 12 sample health centers in 2019 and 2021

Infectious diseases	Number of health centers whose domain values have increased	Number of Puskesmas whose domain value has decreased	Number of Puskesmas with fixed domain values	asympt. Sig. (2-tailed)
Malaria	2	7	3	0.144
Tuberculosis	6	5	1	0.533
HIV-AIDS	7	2	3	0.046
Sexually Transmitted Infection	6	3	3	0.227

Regarding the readiness of health centers in handling HIV-AIDS, seven health centers increased domain values in 2021 compared to 2019, 2 health centers have decreased, and three health centers have fixed domain values. The test results show a significant difference between the domain mean in 2021 and 2019, with $p = 0.046$. The HIV-AIDS readiness domain is based on an assessment of 10 tracking indicators, namely Guidelines for the management of opportunistic infections of HIV/AIDS, Guidelines for Counseling and Testing for HIV/AIDS, Guidelines for the prevention of transmission of HIV/AIDS from mother to child, HIV drug Zidovudine tablets, HIV drug Zidovudine + lamivudine tablet + Nevirapine, HIV drug Nevirapine, HIV drug Lamivudine, Tools HIV CD4, HIV CD8 Tool, and HIV Rapid Test Tool for HIV diagnosis. Two tracking variables have increased, namely Zidovudine HIV drug, Zidovudine drug + lamivudine tablet + Nevirapine; 5 tracking variables decreased, namely Guidelines for the management of opportunistic infections of HIV/AIDS, Guidelines for Counseling and Testing for HIV/AIDS, Guidelines for the prevention of transmission of HIV/AIDS from mother to child, HIV drug Nevirapine, CD4 HIV device; 3 tracking variables that have no increase or decrease, namely HIV drug Lamivudine, CD8 HIV Tool, and HIV Rapid Test Tool for HIV diagnosis. The highest increase occurred in the presence of an HIV rapid HIV test diagnostic tool in 2021.

An assessment of the readiness of health centers in handling sexually transmitted infections shows that six health centers increased domain values in 2021 compared to 2019, 3 health centers have decreased, and three health centers have fixed domain values. The test results show no significant difference between the domain means in 2021 and 2019, with $p = 0.227$. The readiness domain for Sexually Transmitted Infections (STIs) is based on an assessment of 10 tracking indicators, namely the diagnosis of sexually transmitted infections, treatment of sexually transmitted infections, the presence of trained human resources in the diagnosis and management of sexually transmitted infections, the existence of guidelines for diagnosis and treatment of sexually transmitted infections, availability of amoxicillin. Tablets, Ampicillin injection, penicillin procaine injection, Cefixime tablets, ceftriaxone injection, and ceftriaxone tablets. Five tracking variables have increased, namely the diagnosis of sexually transmitted infections, treatment of sexually transmitted infections, the presence of trained human resources in the diagnosis and management of sexually transmitted infections, the existence of guidelines for diagnosis and management of sexually transmitted infections, availability of injection of Ampicillin; 2 tracking variables decreased, namely the availability of Amoxicillin tablets and procaine penicillin injection; and the three tracking variables did not experience an increase or decrease in the domain, namely Cefixime tablets, injection ceftriaxone, and ceftriaxone tablets. All Puskesmas do not have the availability of ceftriaxone tablets or injections,

both in 2019 and 2021. Treatment of sexually transmitted infections, presence of trained human resources in diagnosis and management of sexually transmitted infections, availability of guidelines for diagnosis and management of sexually transmitted infections, availability of injection of Ampicillin; 2 tracking variables decreased, namely the availability of Amoxicillin tablets and procaine penicillin injection; and the three tracking variables did not experience an increase or decrease in the domain, namely Cefixime tablets, injection ceftriaxone, and ceftriaxone tablets. All Puskesmas do not have the availability of ceftriaxone tablets or injections, both in 2019 and 2021. Treatment of sexually transmitted infections, presence of trained human resources in diagnosis and management of sexually transmitted infections, availability of guidelines for diagnosis and management of sexually transmitted infections, availability of injection of Ampicillin; 2 tracking variables decreased, namely the availability of Amoxicillin tablets and procaine penicillin injection; and the three tracking variables did not experience an increase or decrease in the domain, namely Cefixime tablets, injection ceftriaxone, and ceftriaxone tablets. All Puskesmas do not have the availability of ceftriaxone tablets or injections, both in 2019 and 2021.

Moreover, injectable procaine penicillin; and the three tracking variables did not experience an increase or decrease in the domain, namely Cefixime tablets, injection ceftriaxone, and ceftriaxone tablets. All Puskesmas do not have the availability of ceftriaxone tablets or injections, both in 2019 and 2021. Moreover, injectable procaine penicillin; and the three tracking variables did not experience an increase or decrease in the domain, namely Cefixime tablets, injection ceftriaxone, and ceftriaxone tablets. All Puskesmas do not have the availability of ceftriaxone tablets or injections, both in 2019 and 2021.

6. Conclusion

1. The average malaria service has decreased from 2019 by 9.4% in 2021. The indicators of malaria tracking that have decreased are the administration of Artemisinin injection, Artemisinin tablet, Quinine/Kinin tablet/inj, and Primaquinin tablet. The decrease in average occurred in Ogan Komering Ilir Regency and Jayapura Regency.
2. The average HIV/AIDS service at Puskesmas has increased from 2019 to 6.9% in 2021. However, several indicators of HIV/AIDS tracking such as guidelines for the management of HIV/AIDS opportunistic infections, guidelines for Counseling and Testing HIV/AIDS, guidelines for preventing HIV/AIDS transmission AIDS from mother to child, the HIV drug Nevirapine, and HIV CD4 devices have decreased. The decline in the average occurred in the city of Yogyakarta.
3. The average TB service has increased from 2019 by 9.3% in 2021. However, several TB tracking indicators have decreased, such as TB Drugs Isoniazid + Rifampicin tablets and TB Drugs Isoniazid + Rifampicin + Pyrazinamide tablets. The decrease in average occurred in Ogan Komering Ilir Regency, Yogya City, and Southwest Sumba Regency.
4. The average service for sexually transmitted infections has increased from 2019 by 8.3% in 2021. The indicator that has decreased is the administration of injectable procaine penicillin. The decline in the average occurred in Ogan Komering Ilir and Southwest Sumba districts.
5. The Wilcoxon test between the domain mean in 2021 compared to 2019 shows no significant difference in malaria service readiness, tuberculosis service readiness, and STI service readiness. Meanwhile, the readiness of HIV/AIDS services shows significant differences.

Abbreviation

SARA: Service Availability and Readiness Assessment; Rifaskes: Health Facility Research; NIHRD: National Institute of Health Research and Development; WHO: World Health Organization; TB: Tuberculosis; HIV: Human Immunodeficiency Virus; AIDS: Acquired Immune Deficiency Syndrome; STI: Sexually Transmitted Infection

Research Ethics

This research has received ethical approval from the Health Research Ethics Commission, Health Research and Development Agency (KEPK-BPPK), according to letter number: LB.02.01/2/KE.497/2021. All respondents can refuse to participate if they do not like it and have filled in their informed consent before the interview.

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