

Unraveling the Success Factors and Challenges in Implementing the COVID-19 Vaccination Program: A Case Study of the Community Health Center in Palembang

Aminah Aulia Dewi, Rizma Adlia Syakurah

Faculty of Public Health, Universitas Sriwijaya Indonesia

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ABSTRACT

Background: The escalating number of COVID-19-positive cases and mortality within the community has prompted the government to prioritize vaccination efforts. However, the vaccination target has not yet reached optimal, particularly in Palembang. This study aims to evaluate the implementation of the COVID-19 vaccination program at the Community Health Center in Palembang through a descriptive qualitative approach.

Subjects and Method: This was qualitative study. The data were obtained through in-depth interviews, observations, and document reviews conducted at the Community Health Center between November 25, 2021, and December 30, 2021. The research was carried out at five Community Health Centers, selected based on their accreditation status and their achievements in the COVID-19 vaccination program. A total of ten informants were selected using consecutive sampling. The data collection tools utilized included interview guidelines, voice recorders, note-taking materials, documentation instruments, observation sheets, and stationery.

Results: The findings of this study indicate consistency in various aspects of the input component, including the vaccine team, funding sources, types of vaccines, storage facilities, other support systems, and planning methods. However, due to a lack of data integration among the data management entities, the Community Health Center and Health Office face challenges in accurately determining vaccine targets. The vaccination coverage in Palembang stood at 87.08% for the first dose and 68.52% for the second dose. Unfortunately, delays in achieving vaccine coverage, particularly among specific groups such as older people, have hindered the development of expected herd immunity. There have been no reports of severe adverse events following immunization (AEFIs) within the community.

Conclusion: The COVID-19 vaccination program in Palembang was implemented well. However, data management entities must prioritize data integration to fulfill vaccination targets.

Keywords: community health center, covid-19, implementation, vaccination

Correspondence:

Rizma Adlia Syakurah. Public Health Sciences, Faculty of Public Health, Universitas Sriwijaya. Jl. Raya Palembang-Prabumulih KM. 32 Indralaya, Ogan Ilir, Sumatera Selatan, 30662, Indonesia. Mobile: +62819-4863-001. Email: rizma.syakurah@gmail.com.

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BACKGROUND

The increasing number of confirmed positive cases and fatalities of the Covid-19

pandemic in Indonesia have prompted the government to enforce diverse social restric-

tion policies. However, inadequate adherence to regulations and the utilization of health protocols have impeded their implementation. Consequently, the government is endeavoring to curb the spread of Covid-19 through the implementation of the COVID-19 immunization program (Pemerintah RI, 2021). As of October 23, 2021, more than half of Indonesia's population has received the initial dose of the vaccine (53.91%), and 32.25% have received the second dose (Kementerian Kesehatan RI, 2021e). Unfortunately, this achievement remains limited as it falls below the targets of 70%. Furthermore, the progress of the elderly group in obtaining vaccination has been the most sluggish, with 36.91% having received the first dose and 23.19% having received the second dose (Kementerian Kesehatan RI, 2021d).

Palembang, one of the ten cities in Indonesia with the highest Covid-19 mortality rate, has recorded 1,181 fatalities. However, the vaccination rate in this city remains low, particularly among the older population (Kementerian Kesehatan RI, 2021c). Previous studies have elucidated that online data collection and scheduling pose challenges to the vaccination programs. This is primarily due to the absence of internet access in all community health centers and the lack of updated population data, which consequently leads to overcrowding and lengthy queues (Fadhilah et al., 2021). Moreover, individuals receiving the vaccine must undergo a four-phase process, resulting in less efficient delivery of vaccination services (Nikmatillahi, Setiatin and Wiyaksa, 2021). Against this backdrop, we are motivated to evaluate the implementation of the Covid-19 vaccination program in Palembang. It is anticipated that the findings of this study will serve as an evaluative tool for improving the efficacy of the Covid-19 vaccine program.

SUBJECTS AND METHOD

1. Study Design

This study represents a qualitative research conducted from November 25, to December 30, 2021. The research was carried out at five Community Health Centers, selected based on their accreditation status and their achievements in the COVID-19 vaccination program. The selected Health Centers included Dempo Health Center, Makrayu Health Center, Boom Baru Health Center, Sei Baung Health Center, Talang Ratu Health Center, as well as the Palembang Health Office.

2. Population and Sample

Informants were purposively selected based on specific criteria, which included a minimum working period of 6 months and active involvement in the responsibilities related to the COVID-19 vaccination program. The informants for this study comprised key informants, namely the Head of Public Health at the Palembang City Health Office, and main informants, namely functional doctors and midwives serving as immunization coordinators at the Community Health Centers in Palembang.

3. Operational Definition of Variable

Medical personnel: Health workers at health centers responsible for COVID-19 vaccination services (indicators: availability, qualifications, and training of human resources).

Money: Costs incurred in providing health services for the financing of the COVID-19 vaccination program (indicators: source and availability of funds).

Method: Guidelines utilized by health centers in implementing COVID-19 vaccination services (indicators: availability of Standard Operating Procedures [SOPs] and technical guidelines).

Material: The requirement for materials used for COVID-19 vaccination logistics (indicator: completeness of facilities and infrastructure).

Planning: Strategic planning for preparing COVID-19 vaccine provision at health centers (indicators: planning stages, estimated needs, and planning time).

Implementation: Mechanisms for implementing services, adherence to SOPs, and distribution of the COVID-19 vaccine (indicators: performance conformity with SOPs, distribution, and implementation mechanisms).

Supervision: Activities aimed at monitoring and evaluating the implementation of COVID-19 vaccination at health centers (indicators: implementation time, availability of control, monitoring, and evaluation schedule).

Output: Outcomes of COVID-19 vaccination and adverse events following immunization (indicators: number of vaccination achievements, reporting of adverse events following immunization [AEFI]).

4. Study Instrument

The research instrument uses interview guidelines that refer to the theory of system approach (Azwar, 2010), Minister of Health Regulation Number 10 of 2021 concerning the Implementation of Vaccination in the Context of Combating the 2019 Corona Virus Disease Pandemic (COVID-19) (Kementerian Kesehatan RI, 2021b), and observation guidelines. The data collection tools utilized included interview guidelines, voice recorders, note-taking materials, documentation instruments, observation sheets, and stationery.

5. Data Analysis

Triangulation of methods, sources, and data was performed to ensure data validation. Interview transcripts were transcribed, analyzed by the researcher using content analysis techniques, and presented in a narrative form

6. Research Ethics

The research objectives, aims, and the necessary information concerning respondent data were communicated in advance, accompanied by informed consent. This research was approved by the Ethics Committee of the Faculty of Public Health, Universitas Sriwijaya, under the reference number: 311/UN9.FKM/TU.KKE/2021.

RESULTS

1. Sample Characteristics

The informants who participated in the in-depth interviews included the Head of Public Health at the Palembang City Health Office (10%, n=1), functional doctors from Health Centers (50%, n=5), and midwives serving as immunization coordinators at Health Centers in Palembang (40%, n=4). All informants were female (100%). The mean age ± standard deviation (SD) of the informants was 36.80 (±8.1489) years between ages 28-51 years, and the mean ± SD working period was 7.85 (±6.528) years, between 2-20 years (Table 1).

Tabel 1. Informants' Characteristic of in-depth interviews (Categorical data)

Characteristic	Categori	Frequency	Percentage (%)
Position	Head of Public Health Palembang Health Office	1	10.0
	Functional doctors Health Center	5	50.0
	Midwife's immunization coordinators of Health Center	4	40.0
Education background	Master of Public Health	2	20.0
	Bachelor of Medicine	4	40.0
	Diploma of Midwifery	4	40.0

2. Input Components COVID-19 Vaccination Program at Community Health Centers in Palembang

The input components of the COVID-19 vaccination program at the Community Health Centers consisted of man, money, method, and material (7). The Community Health Center Vaccine team comprised both medical and non-medical personnel who were duly authorized through a decree. The vaccinators and screeners were medical professionals, including doctors, nurses, or midwives, who possessed licenses and had undergone vaccination training. The non-medical officers had administrative roles in registration, recording, reporting, observation, maintaining a hygienic environment, and handling logistical matters.

The funding for the COVID-19 vaccination program at the Community Health Centers was sourced from the State budget (Anggaran Pendapatan dan Belanja Negara-APBN), the local government budget (Anggaran Pendapatan dan Belanja Daerah-APBD), Health Operational Assistance (Bantuan Operasional Kesehatan-BOK), and the Local Community Service Agency (Badan Layanan Umum Daerah-BLUD). Each source contributed a sufficient budget, with APBN funds designated for vaccines, APBD funds allocated for COVID-19 vaccination team incentives, and BOK and BLUD funds utilized for the operational tasks of the Community Health Centers, including personnel transportation for vaccine distribution. The implementation of the COVID-19 vaccine program adhered to the SOPs of the Community Health Centers and the Technical Instructions provided by the Ministry of Health in 2021. However, the recent changes in the Health Ministry Guidelines regarding the 2-desk service flow SOPs have caused confusion among the staff.

The materials required for the vaccine program included various vaccine types,

personal protective equipment (PPE), cold chain equipment, and IT support. The vaccines and PPE were supplied through a drop-off method from the Palembang Health Office. The available vaccine types included Sinovac, Pfizer, AstraZeneca, and Moderna. The availability of PPE depended on the stock in the warehouse, and the Community Health Centers independently allocated them. However, due to limited quantities, not all officers were able to wear PPE such as gowns/aprons and gloves. The availability of facilities and infrastructure also played a role in optimizing the services. However, the limited supply of certain types of PPE, such as aprons and gloves, hindered the vaccine teams from utilizing them during service delivery. The vaccine availability was monitored using the SMILE and FIFO (First In, First Out) methods. However, there was a lack of synchronization between the SMILE and Pcare vaccine data, as the criteria for one vial's quantity differed in both applications. Moreover, data entry in the SMILE application was often backdated after the vaccine implementation date. The Cold Chain facilities at the Community Health Centers were in good condition and employed a two-door system.

The temperature was monitored using thermometers, and the logistics officer recorded temperature charts. A standby generator was available to anticipate power outages, and vaccines were stored in cold boxes with cool packs and thermometers during service. However, the vaccine teams faced challenges with outdoor vaccine services as the cool packs frequently melted. Additionally, IT support encountered frequent barriers, including errors in the Pcare app, internet interruptions, limited availability of printers, and incompatible laptops.

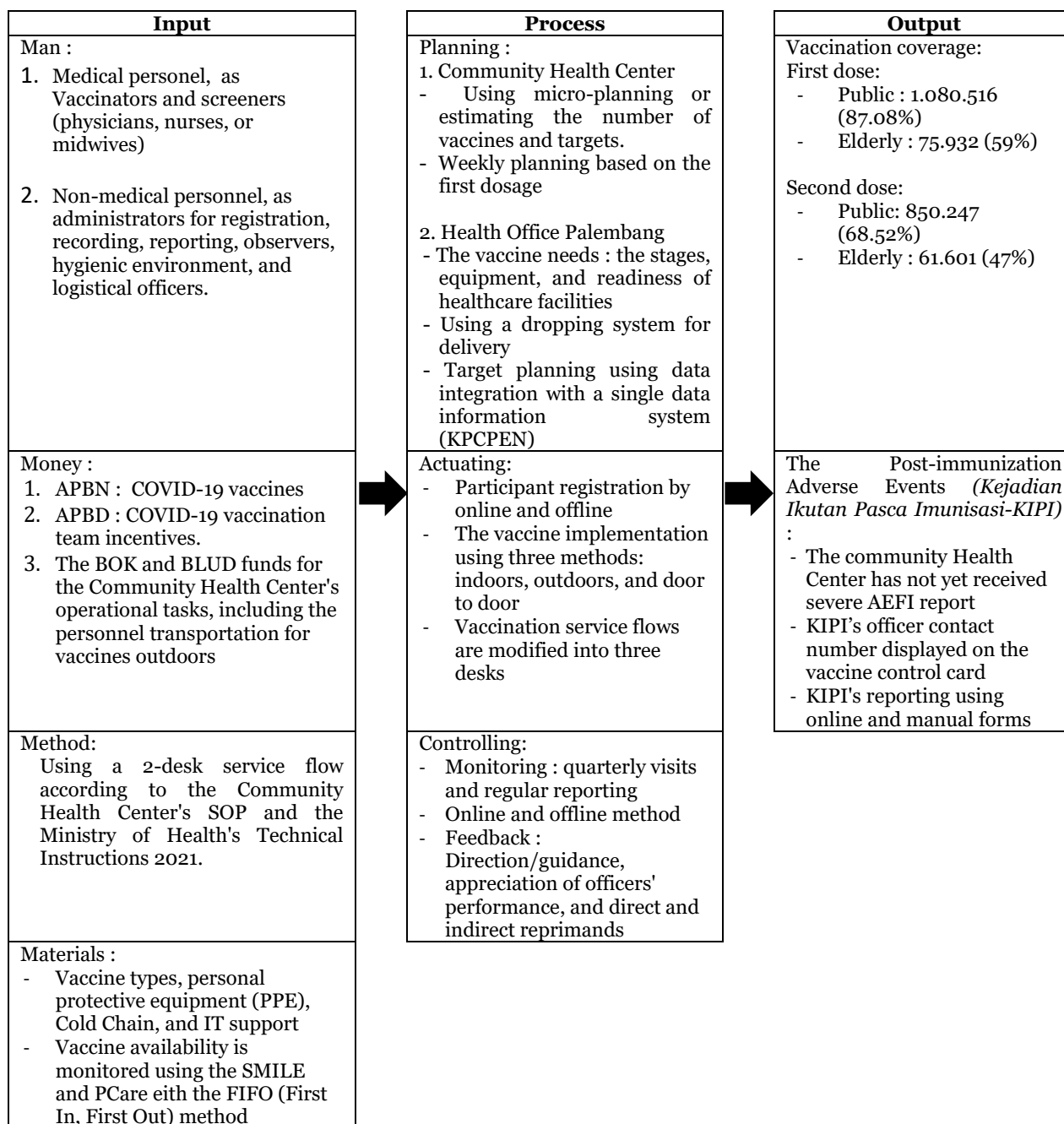


Figure 1. Chart flow input, process and output of the COVID-19 Vaccination Program at Community Health Centers in Palembang

3. Process Components COVID-19 Vaccination Program at Community Health Centers in Palembang

This stage consists of planning, actuating, and controlling in the COVID-19 vaccination program at the Community Health Centers in Palembang. Vaccination planning involves micro-planning or estimating the number of

vaccines and targets. Based on in-depth interviews, observations, and document reviews, weekly planning requirements were conducted for the first dosage and adjusted for the second dose of the vaccine plan, considering the target group. The plan was then submitted to the health office. However, defining the vaccine target was challenging

since the vaccine could be administered at any medical facility.

Vaccine planning requirements in the Health Office Palembang were determined by calculating the vaccine needs based on the stages, equipment, and readiness of health care facilities. Delivery of vaccines was conducted using a dropping system from the capital. Vaccination target planning involved data integration with a single data information system (KPCPEN) from the Population and Civil Registration Office (Dinas Kependudukan dan Catatan Sipil), Health Insurance Office (BPJS), and Health Human Resource applications (Sumber Daya Manusia Kesehatan). However, due to incomplete registration in the Population and Civil Registration Office or BPJS, the Health Office lacked adequate data based on names and national IDs. Document review indicated that the Health Office Palembang could propose insufficient vaccines to the Ministry of Health through the Provincial Health Office, using the remaining final stock data and the number of vaccines needed for the following week. The Health Office Palembang had not implemented indicators such as targeting, vaccine rates, stock availability estimates, and service capacity for planning vaccine allocation and logistics at the Community Health Center.

The vaccine mechanism began with participant registration online and offline. Offline registration was conducted for data validation, elderly individuals, and lower-middle-class individuals with limited internet access. By registering early at www.vaksinonline.com, the public could find the preferred date, time, and vaccine type. The vaccine was implemented using three methods: patients coming directly to the Community Health Center (indoors), collaboration with health service facilities appointed by the Health Office in certain areas with a larger target (outdoors), and direct visits to

homes, especially for the elderly (door to door). These three vaccination strategies were implemented to accelerate and broaden the nation's vaccine coverage. Unlike the standard operating procedure (SOP), the vaccination service flows were modified into three desks: the first desk for pre-registration, the second desk for screening and vaccination, and the third desk for observation, data entry, and certificate printing. The pre-registration table was necessary to prevent service delays due to unavailability of public ID numbers in the online system. Vaccines were distributed after the approval application letter and pickup by ambulance from the Health Office's pharmacy warehouse. Distribution was not hindered by distance or geographical conditions in the downtown area.

The Health Office's supervision team monitored vaccine implementation through quarterly visits and regular reporting. Online and offline monitoring and evaluation were conducted on the cold chain facilities, conditions and methods of storing vaccines, conformity of services with SOPs, and vaccine waste. Monitoring and evaluation provided feedback, such as direction/guidance, appreciation of officers' performance, and direct and indirect reprimands through written letters to the Community Health Center. This stage also identified barriers in vaccine implementation. The Community Health Center had to implement a quota system based on the number of vaccine vials due to restricted patient numbers and the circulation of numerous types of vaccines. In addition, both indoor and outdoor health protocols were not adequately enforced, vaccination was not scheduled, and there were no officers to explain adverse events following immunization (KIPI) and the complaint mechanism. Insufficient support for vaccination facilities might pose problems

in implementing health protocols during vaccination services

4. Output Components COVID-19 Vaccination Program at Community Health Centers in Palembang

The output component focused on the result vaccine program, namely the COVID-19 vaccination coverage in Palembang and the Post-immunization Adverse Events (Post-Immunization-AEFI Adverse Events). The results show that the number of first and second stages of vaccines is 87.08% and 65.52%, while the vaccine target for the elderly group has only reached half (Table 3).

Based on Table 3, the results of vaccination progress among the elderly group are still 1.5 times lower than the public group, both the first and second doses. For the Post-immunization Adverse Events, the Community Health Center has not yet received a report of severe AEFI. Patients who experience Post-immunization Adverse Events can contact the number displayed on the vaccine control card. This will report online on the vaccine safety website, while light AEFIs use manual forms and are not reported.

Table 3. COVID-19 Vaccination in Palembang on January 17, 2022

Vaccine	Public group (%)	Elderly group (%)
First dose	1.080.516 (87.08%)	75.932 (59%)
Second doses	850.247 (68.52%)	61.601 (47%)
Third doses	-	-
Total target in Palembang	1.240.849	128.519

Source: Health Office Palembang, 2022

DISCUSSION

1. Input Components COVID-19 Vaccination Program at Community Health Centers in Palembang

The human resources involved in vaccination programs possess the required quantity and qualifications as stipulated in the technical instructions (Kementerian Kesehatan RI, 2021a) (Kementerian Kesehatan RI, 2021b). However, the lack of human resources, limited training of the vaccination team, employee mutations, burnout, and increased workload during the pandemic have overwhelmed the officers. Despite these challenges, the vaccination team has managed to continue their work without compromising essential services in the Community Health Centre, albeit with an impact on their performance. The provision of patient care has decreased for both Public and Individual Health Efforts due to the increased workload brought about by the

pandemic (CISDI, 2021) (Simanjuntak, Atthahara and Priyanti, 2022). In Indonesia, the majority of Community Health Centers have more than four vaccine staff, with nearly 90% of them being existing staff members without additional hires, and not all vaccinators have received training (CISDI, 2021). It is essential to have an adequate quantity, type, quality, and distribution of health human resources to effectively implement health services (Pemerintah RI, 2021). Given the extensive COVID-19 vaccine target group, the additional hiring of trained vaccinators is necessary to anticipate the demand (Nurlailah, 2021).

According to Djaja, budgeting in the government sector pertains to the determination of allocated budgets for each program and the corresponding activities (Siswati et al., 2021). The reimbursement process for incentive funds encounters difficulties due to bureaucratic complexity,

numerous documentation requirements, and limited funding received. Although no funding issues were identified, providing appropriate incentives could encourage greater effort or enhance performance (Manshur, 2022). Previous research by Rahmanda supports the notion that providing material and non-material incentives significantly impacts work motivation and employee performance (Sukarji, 2020). Incentives are linked to the level of sacrifice (Input) and the expected output. Consequently, a greater sacrifice is associated with higher expected incentives (Kudsi, Riadi and AS, 2018). In this study, sacrifice is connected to the increased workload experienced by the officers.

During implementation, frequent changes in standard operating procedures (SOPs) can lead to employee ambiguity, nervousness, and an inability to achieve goals (Valentino and Indahingwati, 2019). Conversely, well-designed SOPs can optimize and organize service implementation, resulting in seamless operations, public satisfaction, and a positive institutional image, thereby enabling efficient and effective services (Sandhi and Dewi, 2021). Moreover, SOPs establish consistent bureaucratic procedures that align with existing regulations without conflicts (Daming et al., 2021). The current study found that not all health officers use aprons as personal protective equipment (PPE) during vaccination services. Consistent with a previous survey, a significant number of aprons were unavailable at the Community Health Center (CISDI, 2021). The availability of PPE should be carefully considered, especially considering the rise in COVID-19 cases. PPE is effective in protecting health workers from contracting COVID-19, and therefore, medical personnel are strongly encouraged to wear complete PPE while working (Sinaga et al., 2021). Additionally, the cold chain plays

a crucial role in maintaining the quality of vaccinations and must be closely monitored by vaccine officers and the Health Office. Other infrastructural elements also require oversight to ensure service quality and the provision of optimal services (Kementerian Kesehatan RI, 2018).

2. Process Components COVID-19 Vaccination Program at Community Health Centers in Palembang

The Covid-19 vaccine planning requirements encompass various considerations such as the number of targets, health facilities providing services, implementing officers, vaccine needs, supporting equipment, and logistics (Kementerian Kesehatan RI, 2021a). The Community Health Center and the Health Office encountered difficulties in determining the number of vaccine targets. Regrettably, the data obtained from authorized institutions is not yet well-integrated. The government also lacks a specialized vaccination database due to inadequate integration of data from Disdukcapil, BPJS Kesehatan, and BPJS Ketenagakerjaan. This issue is supported by a case study conducted at the Mojo Health Center in Surabaya, where population data has not been updated (Fadhilah et al., 2021). In other cases, data on potential vaccine recipients are not synchronized, as evidenced by the existence of Covid-19 survivor data or data indicating vaccination elsewhere (Nurlailah, 2021). The lack of integrated data could hinder the distribution of vaccines in the community (Magna et al., 2021). Utilizing bottom-up data through the initial data gathering conducted by the Covid-19 Task Force in villages could help address the data allocation issue (Magna et al., 2021).

The Covid-19 vaccine was implemented through website-based applications, which are crucial during the pandemic as they facilitate public access and enable reci-

ipients to locate schedules based on appropriate timing (Mudhakhir and Yusherma, 2021). Online registration enables efficient and effective vaccine deployment, with fewer crowds and shorter waiting times (Wicaksono and Setiawan, 2022). Outdoor vaccine implementation caters to a wider target audience. According to the global scientific community, mass vaccination of the world's population is the most effective strategy to halt the COVID-19 pandemic (Kusuma and Keamanan, 2021). Moreover, the utilization of two-desk vaccination service flows is considered more streamlined and expedient, while the adoption of three desks helps minimize service delays caused by the lack of online availability of vaccine participant national IDs and shortens the service flow (Fadhilah et al., 2021) (Nikmatillahi, Setiatin and Wiyaksa, 2021). Technically, vaccine implementation and distribution adhere to the standard operating procedure (SOP) (Kementerian Kesehatan RI, 2021a).

In addition to vaccine implementation, this stage also includes monitoring and evaluating vaccine-related medical waste. Not all Community Health Centers have proper facilities for the disposal of medical waste. Improper waste management may give rise to other health issues (CISDI, 2021). Evaluation results highlight the barriers arising from inadequate infrastructure and facilities that hinder the full implementation of health protocols (Erjalina and Syakurah, 2021). Furthermore, incompatibilities between the vaccination schedule and the recommended time intervals can result in suboptimal antibody response or reduced vaccine effectiveness (Finaka, Nurhanisah and Devina, 2021).

3. Output Components COVID-19 Vaccination Program at Community Health Centers in Palembang

The older group exhibits a lower vaccination rate due to the presence of comorbid issues, their inability to independently access health facilities, rejection from individuals or families, fear, and unwillingness to travel. Previous studies have demonstrated that the willingness of older people to receive the COVID-19 vaccine is influenced by their perceptions of the severity and obstacles associated with the disease (Harianja and Eryando, 2021). Furthermore, access barriers negatively affect the interest of older people in getting vaccinated (Syafrianto, Hasyim and Haerawati, 2022). Moreover, elderly individuals with limited mobility who spend more time at home and engage in less travel tend to have lower acceptance of the vaccine (Harapan et al., 2020). To address this issue, the Community Health Center has implemented an effective age program that involves inviting two elderly individuals for door-to-door services, aiming to increase vaccination rates among this population, consistent with previous research findings (Sutari, Idris and Misnaniarti, 2022).

Despite efforts, the vaccination rate in Palembang City has not yet reached the national target of 70%. Insufficient vaccination coverage among older people poses a hindrance to achieving herd immunity. Given the high risk faced by the elderly group, immediate vaccination is essential to minimize the potentially severe impacts of COVID-19 disease. The success of the COVID-19 vaccination program necessitates collaborative efforts across various sectors, even though numerous strategies have already been implemented (Kementerian Kesehatan RI, 2021a). Monitoring of adverse events following immunization (AEFI) by healthcare facilities should be

recorded either manually or electronically on a designated website to ensure vaccine safety (Kementerian Kesehatan RI, 2021a). Observation of AEFIs should occur within 15 to 30 minutes after injection to detect any rapid reactions promptly. Since the COVID-19 vaccine falls under the category of a new type of vaccine, enhancing AEFI detection and reporting is the initial step in improving vaccine safety monitoring, positively impacting patient safety (RSUD Banjarnegara, 2021). AEFI reporting also plays a crucial role in addressing post-vaccination legal protection, which directly relates to public health and safety (Ayunda, Kosasih and Disemadi, 2021).

AUTHOR CONTRIBUTION

Aminah Aulia Dewi and Rizma Adlia Syakurah are responsible for the conception and design of the study. Aminah Aulia Dewi performed data collection, analysis, and drafting. All authors performed data interpretation. Rizma Adlia Syakurah did critical revisions and final approval of the version to be published.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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