Jurnal Ilmiah Keperawatan Stikes Hang Tuah Surabaya
P-ISSN 2085-3742 | E-ISSN 2598-1021
http://journal.stikeshangtuah-sby.ac.id/index.php/JIKSHT

POLICY BRIEF

Double-Ring Vaccination as Acceleration Tools of Measles Vaccination Coverage in Papua

Isak Jurun Hans Tukayo *[1], Blestina Maryorita [1], Jems Kifen Rogert Maay [1], Sukatemin Sukatemin [1]
[1] Poltekkes Kemenkes Jayapura, Papua, Indonesia
**Corresponding Author*: tukayoisak123@gmail.com

ARTICLE INFORMATION

Article history
Received (26th, September 2023)
Revised (16th, September 2023)
Accepted (31th , October 2023)

Keywords
Double ring; Vaccination; Measles; Papua

ABSTRACT

Seven districts in Papua experienced an increase in measles cases during the Covid pandemic, namely Nabire, Paniai, Mimika, Puncak, Dogiyai, Intan Jaya, and Deiyai. So far, there is no policy that is truly effective in efforts to increase the coverage of measles immunization in pandemic areas such as Papua. The objectives to develop a policy brief that can provide recommendations for increasing the coverage of measles immunization in pandemic areas. This study used a quantitative method with a descriptive design. The instrument was a questionnaire distributed online, in Papua Province and held in July-August 2023. The population was 120 health workers. The inclusion criteria were nurses who are directly involved in the management of measles in Papua. The exclusion criteria were health workers in Papua or outside Papua and those who do not treat measles. The dependent variable was measles. The independent variable was immunization coverage. The secondary data were taken from official government documents or WHO and the Indonesian Ministry of Health and reputable journals. Data processing was carried out univariately and analyzed descriptively. The results showed the majority of respondents were involved in the measles program (n=62 or 54.3%), witnessed an increase in measles cases during the pandemic (n=87 or 76.3%), and considered the measles management program to be ineffective (n=69 or 59.3%). The most influential factors in the decrease in the measles vaccination rate were a mixture of fear, lack of knowledge, and culture (n: 59 or 52%) The majority think it is necessary to make changes to the measles program policy (n: 82 or 72%) The aspect that was most needed in policy changes was a combination of mechanisms, human resource facilities, and procedures (n=33 or 29%). This study recommends a policy brief on double-ring vaccination, namely the administration of measles vaccination in two areas surrounding the area affected by the measles outbreak.

Jurnal Ilmiah Keperawatan is a peer-reviewed journal published by Sekolah Tinggi Ilmu Kesehatan Hang Tuah Surabaya (STIKES Hang Tuah Surabaya)

Website: http://journal.stikeshangtuah-sby.ac.id/index.php/JIKSHT
E-mail: jurnalilmiahkeperawatan.sht@gmail.com / jik.sht@stikeshangtuah-sby.ac.id

Introduction

Indonesia does not yet have a standard policy for all areas that have been affected or have the potential to have measles problems every year. During the Covid-19 pandemic, several areas experienced extraordinary cases of measles (Khanal et al., 2022). It is feared that extraordinary events (KLB) will be worse in areas such as Papua which are socio-economic and geographically facing greater challenges than other regions in Indonesia (Msiren & Yuwono, 2018; R. Pugu Melyana et al., 2019). The Ministry of Health determines Extraordinary Events (KLB) for the high transmission of measles in Indonesia (Yonanda, 2022). As of December 2022, 31 provinces have reported cases of measles transmission . The emergence of measles outbreaks was influenced by the Covid-19 pandemic (UN DESA, 2020). At that time, especially at the beginning of the pandemic, it was a health problem that needed to be prioritized and there was a decrease in the coverage of measles immunization for children (Husada et al., 2020). That decrease has an impact on reducing the level of herd immunity in society (Shimizu et al., 2021). Unlike the pre-pandemic

period, the spread of measles was under control (Fakhruddin et al., 2020). It means that cases of measles transmission are only sporadic, not in the form of epidemics or outbreaks. On the other hand, the increase in measles transmission cannot be separated from the large number of pockets that refuse the vaccine (Kantohe et al., 2019; Teti & Jannah, 2022). The number of measles cases increased sharply during the Covid-19 pandemic following a decrease in measles vaccination coverage in Papua (Fajriana & Ulfa, 2021; Victor Tseng, 2021). Based on the Ministry of Health's report, the coverage of MR1 immunization was only 64.1 percent, then decreased to 48.6% for MR immunization (Kemenkes RI., 2022). In the field, 87% of cases that have been reported have never received MR immunization (Kemenkes RI., 2022). This occurs in almost all age groups, even if the immunization status is mostly 0 (zero). MR immunization is still a powerful way to prevent two diseases at once, namely measles and rubella (Rosadi et al., 2019).

Previous research noted that the severe impact of measles was felt by those who had not been immunized at all, which were vulnerable to complications from other diseases such as pneumonia, inflammation of the brain, and malnutrition (Dixon MG, Ferrari M, Antoni S, 2020; Gao et al., 2020; Prabandari, G.A., Musthofa, S.B., & Kusumawati, 2018). Other impacts cause severe diarrhea to death (Shimizu et al., 2021). Researchers suggest giving the measles vaccine is considered important to increase herd immunity (Teni Nurlatifah et al., 2021). Someone who catches measles will experience a phase of initial symptoms, such as high fever, cough, runny nose, and red eyes (Chu & Rammohan, 2022). That phase is the phase that is most easily transmitted. In addition, the transmission of measles is not through skin touching, but through droplets in the air (Ahaya et al., 2020). Extraordinary events of measles are also caused by incomplete immunization accompanied by constraints on geographical conditions (Gao et al., 2020). In remote areas, parents are not aware of the immunization schedule and it is difficult to educate parents, resulting in lower immunization coverage (Kantohe et al., 2019). Another strategy recommended by researchers includes the health team in handling outbreaks of measles and malnutrition starting with early identification of measles (Rahmayani et al., 2021). If diagnosed, the patient is immediately treated for the infection with antibiotics and then given optimal nutritional intake and vitamin A (Maryati Sutarno & Noka Ayu Putri Liana, 2019).

In contrast to those studies, this research was conducted to prepare a Policy Brief which aims apart from being a medium for exploration, which not only provides selected recommendations but also as a medium for advocacy for the low coverage of measles immunization in Papua in particular, inland and remote areas in general. This research using a quantitative method explores strategic studies on measles management, which is a phenomenon in several pockets in Papua that has occurred since the Covid-19 pandemic. The output of this research is a policy brief whose implications are expected to provide recommendations and input for the preparation of measles immunization policies during the post-Covid-19 pandemic both on a local scale in Papua, remote areas, and nationally

Methods

The preparation of this article used quantitative methods with descriptive analysis techniques. The instrument used in this research was a questionnaire distributed online. The content of the questionnaire was prepared based on the results of research conducted by Winter et al. which was validated (Winter et al., 2022). This research began its implementation in July 2023 until August 2023. The stages of the method include identifying existing phenomena in the field and policy issues through questionnaires, reviewing the results of data processing, developing research benefits, identifying relevant audiences, and analyzing input from respondents in the field. Primary data was obtained from the results of distributing online questionnaires. The research population was health workers. The inclusion criteria were health workers directly involved in the management of measles in Papua. The exclusion criteria were health workers outside Papua and those who did not treat measles. The dependent variable was measles. The independent variable was immunization coverage. Primary data was obtained from

the results of the questionnaire collection. The secondary data was from official government documents or WHO and the Indonesian Ministry of Health and journals for the last five years from 2018-2023. This approach has been widely used because it is considered a useful analytical technique for uncovering a case of an extraordinary event that has become a phenomenon. The targeted output was a Policy Brief. Data processing was carried out univariately and analyzed descriptively where researchers understood and defined the phenomena to be studied or studied. This article ended by identifying differences of opinion in problem-solving (strengths and weaknesses), then critically describing them supported by evidence and recommending coping policies. This study did not involve a bigger number of respondents with various backgrounds from different health professionals, policymakers, and people from areas affected by the outbreak in different provinces due to limited fund, manpower and time.

Hasil

Demographic data

Table 1. Demographic data distribution based on age, sex, profession, and education

Characteristics	Frequency (f)	Percentage (%)
Age:		
< 25 years old	4	3.4
26-40 years old	70	61.2
> 40 years old	40	35.3
Sex:		
Males	53	46.6
Females	61	53.4
Residency status:		
Native	21	19.5
Non-native	90	80.5
Occupation status:		
indefinite	38	33.6
civil servant	76	66.4
Profession:		
Nurses	96	83.6
Therapist	17	15.5
Other healthcare	1	0.9
Education:		
Diploma 3	46	40.5
Graduate	42	37.1
Post-graduate	26	22.4

The table above shows that the majority of respondents are aged between 26-40 years (61.2%), women predominate (53.4%), the majority are non-native (80.5%), permanent workers as nurses (83.6%) with the greatest education diploma (40.5%).

Involvement in the management of measles and or extraordinary events

Table 2. Involvement in the management of measles and or extraordinary events

Measles-related activities	Frequency (f)	Percentage (%)
Measles program involvement**:**		
Yes	62	54.3
No	52	45.7
Extraordinary event :		
Seen	114	100
Never seen	0	0
The cases increased during the pandemic covid-19		
Yes	87	76.3
No	27	23.7
Is the recent measles program effective?		
Yes	45	40.7
No	69	59.3

The table above shows that the majority of respondents had heard of extraordinary events of measles (54.3%), all had seen them at work (100%), the majority said there had been an increase in cases during the Covid-19 pandemic (76.3%), and they thought the measles program had not been effective so far (60.5%)

Influencing factors of decreasing vaccination

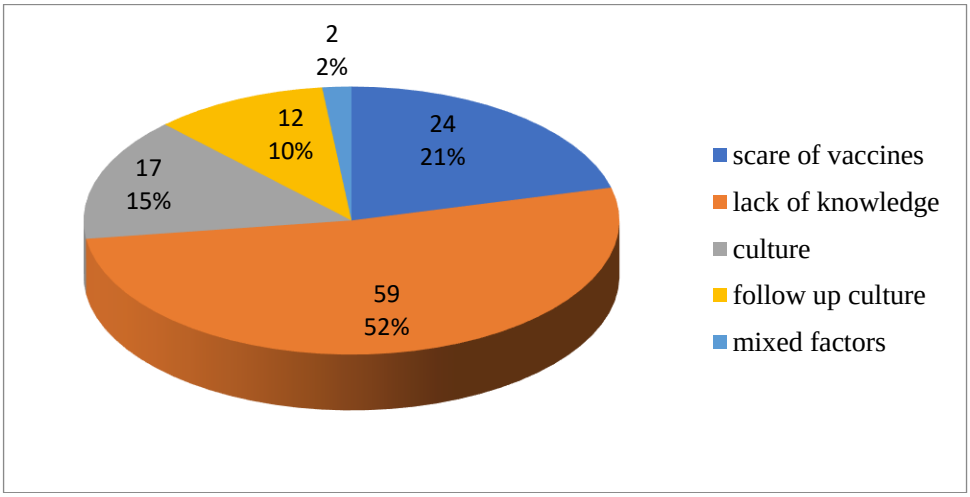

Diagram 1. Influencing factors of decreasing vaccination

The diagram above shows that the most influential factor in reducing the rate of measles vaccination is a mixture of fear, lack of knowledge, and culture (52%). Followed by fear of vaccines (21%) and cultural factors (15%).

Whether or not a change in measles management policy is necessary

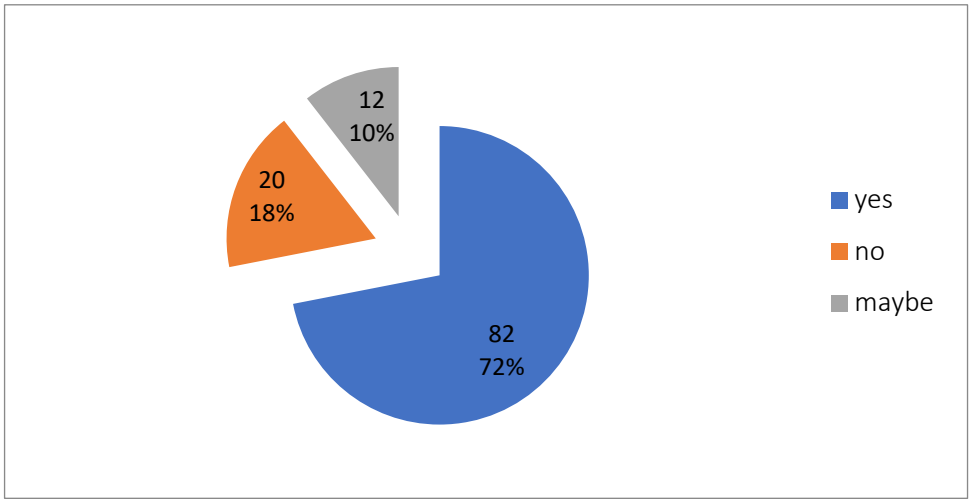

Diagram 2. Whether or not a change in measles management policy is necessary

The diagram above shows that the majority of health workers view it is necessary to make changes to the measles program policy (72%). A small proportion feels still doubtful (10%).

Aspects requiring policy change

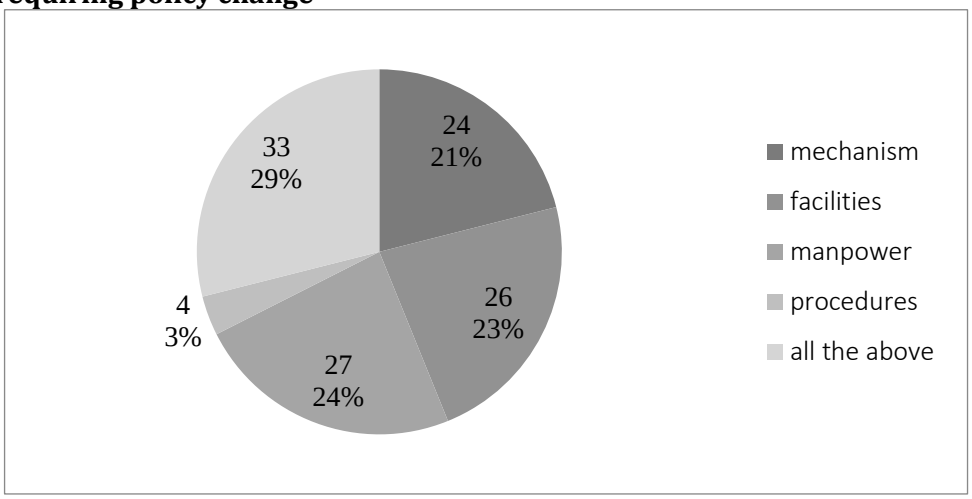

Diagram 3. Aspects Requiring Policy Change

Diagram above shows that the aspect most needed in policy change is a combination of mechanisms, human resource facilities, and procedures (29%). While the second biggest factor is human resources (24%), followed by facilities and infrastructure (23%). Very few thought it was the procedure that needed to be changed (3%).

The results of this study show that all of 114 respondents (100%) witnessed an outbreak during the Covid-19 pandemic, the majority were involved in the measles program (n=62 or 54.3%), they witnessed an increase in measles cases (n=87 or 76.3%) and considered the measles management program to be ineffective (n=69 or 59.3%). The majority believed that the most influential factor in reducing the measles vaccination rate was a mixture of fear, lack of knowledge, and culture (n: 59 or 52%). The majority of health workers thought it necessary to make changes to the measles program policy (n: 82 or 72%). The aspect that is most needed in policy change is a combination of mechanisms, human resource facilities, and procedures (n=33 or 29%).

Discussion

This research sought to reveal the background of the outbreak of measles in outbreak areas in Papua which is supported by the effectiveness of existing policies in the management of measles. Tables 1, 2, and diagrams 1, 2 and 3 show that conventional measles management policies are inadequate. The policy includes administering a complete measles vaccine, health education for those experiencing symptoms, as well as epidemiological surveillance. According to researchers, measles is a highly contagious infectious disease (Kusmawati & Chandra, 2021). If one person with measles is in the same room with ten other people who have never been sick/have never been immunized against measles, it is estimated that those ten people will become infected. Measles can affect children to adults, but the child age group is more susceptible to complications, such as otitis media, diarrhea and pneumonia, and even death (Departemen Kesehatan, 2017; Fakhruddin et al., 2020). Researchers agree that childhood immunization is important to prevent transmission to avoid complications. The number of measles cases has jumped dramatically to reach its peak in the last 23 years (World Health Organization., 2018). In Indonesia, the vaccine for children with measles is included in the national immunization program (Fajriana & Ulfa, 2021). The number of measles cases in Indonesia is relatively high (Harapan et al., 2021). So the government through the Ministry of Health provides free measles vaccine in health facilities such as *Puskesmas* and accredited hospitals (Teti & Jannah, 2022). The effectiveness of the measles or MR vaccine has proven to be very good (Dixon MG, Ferrari M, Antoni S, 2020; Meilani et al., 2021). The benefit of measles immunization is to prevent children from getting sick with measles or to reduce the transmission rate in the surrounding environment. By the recommendations of the Indonesian Pediatrician Association (IDAI) and the Ministry of Health, children aged 9 months can receive measles / MR immunization (Kantohe et al., 2019). It is better to repeat immunization at the age of 18 months (MR vaccine) and at the age of 5-6 years or 6-7 years (Rosadi et al., 2019). Measles immunization in children over 1-year-old can be given combination immunization in the form of the MMR vaccine (measles, mumps, rubella) (Nurdiyan & Ramadhanti, 2017). The decision to immunize up to 3 times is based on expert research (Dixon MG, Ferrari M, 2020). The Ministry of Health of the Republic of Indonesia reported that there were 3,341 cases of measles in 223 districts/cities in 31 provinces in 2022 (Khanal et al., 2022). An increase of 32 times compared to 2021. There were 55 Extraordinary Events (KLB) reported in 34 districts/cities in 12 provinces. The twelve provinces are Aceh, West Sumatra, Riau, North Sumatra, Jambi, West Java, Banten, Central Java, East Java, North Kalimantan, NTT, and Papua (Republika, 23 January, 2023). More than 3,000 cases of measles throughout 2022 spread across 31 provinces. There have been 12 provinces that have issued outbreak statements. An area is called an outbreak if there are at least two cases of measles in that area which have been laboratory confirmed and these two cases have an epidemiological relationship.

This article proposes a review of the existing measles management policies supported by research. The concrete form of double-ring vaccination is to double the covering vaccination in the affected areas in layers. To be precise doubling the amount of vaccination coverage in the surrounding area. The implementation of the program needs to involve cross-sectorial agencies starting from the government, local health offices, integrated health workers, community leaders, and traditional leaders and involving campuses. Research proves that such an integrated program drives the success of a program. Especially in Papua, which traditionally held firmly the local cultural principles? As an initial stage of evaluation, it is necessary to carry out a pilot project, for example in the Central Papua region which has been supported by data, the readiness of health workers, a history of successful outbreak control programs, and local government support. The results of the pilot project are also used as research material that can be accounted for academically. This article cannot be used as a universal description of the condition and management of measles in Indonesia. Even though it is acknowledged that the province of Papua is demographic, sociocultural, and geographically different from other provinces in Indonesia, at least involving a larger population will provide a more real picture.

Conclusion

The four basic issues discussed in this research as the basis for the need for a policy brief are findings in the field through health workers who are directly involved in measles management. These findings include the occurrence of extraordinary events during the pandemic, the decrease in measles vaccination coverage, the public's fear of vaccination, and the policies for controlling measles in remote areas which are felt to be less effective. This study recommends conducting a review of existing policies and conducting a double-ring vaccination pilot project as well as research. The limitation of this research is that it does not involve a larger number of respondents by involving various elements of the community and local government where the implementation requires a large amount of manpower, time, and funds. Considering that national health policies are aimed at improving health status and health policy briefs do not only provide selected recommendations but also act as advocacy media to provide choices for a particular solution, therefore it is very important to carry out the following research as a continuation of this research. The hope is that the policy brief on health policy that has been prepared can support and assist policyholders in choosing the most 'appropriate' alternative policies to choose from..

Acknowledgement

Authors acknowledged the Heath Office of Papua province, Director of Polytechnic of Health of the Ministry of Health of Jayapura, all healthcare workers for supporting the study and our gratitude to everyone including our teaching staff colleagues willing to participate in the study.

References

Ahaya, S. O. S. P., Rahmi, E., & Nurwan, N. (2020). Analisis dinamik model SVEIR pada penyebaran penyakit campak. *Jambura Journal of Biomathematics (JJBM)*, *1*(2), 57–64. https://doi.org/10.34312/jjbm.v1i2.8482

Chu, H., & Rammohan, A. (2022). Childhood immunization and age-appropriate vaccinations in Indonesia. *BMC Public Health*, *22*(1), 1–12. https://doi.org/10.1186/s12889-022-14408-x

Departemen Kesehatan. (2017). Pedoman Kampanye Imunisasi Campak & Rubella (MR) untuk Guru dan Kader. In *Kementerian Kesehatan RI* (pp. 1–4). file:///C:/Users/user/Downloads/files519701. Buku Petunjuk untuk Guru dan Kader_FINAL.pdf

Dixon MG, Ferrari M, Antoni S, et al. (2020). Progress Toward Regional Measles Elimination — Worldwide , 2000 – 2020. *MMWR Morb Mortal Wkly Rep 2021*, *70*(42), 1563–1569. http://dx.doi.org/10.15585/mmwr.mm7045a1external icon

Dixon MG, Ferrari M, A. S. (2020). Progress Toward Regional Measles Elimination — Worldwide , 2000 – 2020. *MMWR Morb Mortal Wkly Rep 2021*, *70*(42), 1563–1569. http://dx.doi.org/10.15585/mmwr.mm7045a1external icon

Fajriana, E., & Ulfa, A. (2021). Faktor-Faktor Yang Memengaruhi Ibu Dalam Pemberian Imunisasi Campak Pada Bayi Di Desa Cot Bada Tunong Kecamatan Peusangan Kabupaten Bireuen the Factors That Affect the Mother in Immunization Against Measles in the Village of Cot Bada Tunong Peusangan Dist. *Journal of Healthcare Technology and Medicine*, *7*(2), 2615–109.

Fakhruddin, M., Suandi, D., Sumiati, Fahlena, H., Nuraini, N., & Soewono, E. (2020). Investigation of a measles transmission with vaccination: A case study in Jakarta, Indonesia. *Mathematical Biosciences and Engineering*, *17*(4), 2998–3018. https://doi.org/10.3934/mbe.2020170

Gao, Y., Kc, A., Chen, C., Huang, Y., Wang, Y., Zou, S., & Zhou, H. (2020). Inequality in measles vaccination coverage in the “big six” countries of the WHO South-East Asia region. *Human Vaccines and Immunotherapeutics*, *16*(7), 1485–1497. https://doi.org/10.1080/21645515.2020.1736450

Harapan, H., Shields, N., Kachoria, A. G., Shotwell, A., & Wagner, A. L. (2021). Religion and Measles Vaccination in Indonesia, 1991–2017. *American Journal of Preventive Medicine*, *60*(1), S44–S52. https://doi.org/10.1016/j.amepre.2020.07.029

Husada, D., Kusdwijono, Puspitasari, D., Kartina, L., Basuki, P. S., & Ismoedijanto. (2020). An evaluation of the clinical features of measles virus infection for diagnosis in children within a limited resources setting. *BMC Pediatrics*, *20*(1), 1–10. https://doi.org/10.1186/s12887-020-1908-6

Kantohe, T. V. M., Rampengan, N. H., & Mantik, M. F. J. (2019). Faktor-faktor yang Memengaruhi Minat Imunisasi Measles Rubella (MR) di Kecamatan Malalayang, Manado. *Jurnal Medik Dan Rehabilitasi (JMR)*, *1*(3), 1–6.

Kemenkes RI. (2022). Indonesian Health Profile 2021. In *Pusdatin.Kemenkes.Go.Id*.

Khanal, S., Kassem, A. M., Sunil Bahl, ;, Liyanage Jayantha, ;, Sangal, ; Lucky, Sharfuzzaman, ; Mohammad, Anindya, ;, Bose, S., Antoni, S., Datta, D., & Alexander, J. P. (2022). Morbidity and Mortality Weekly Report Progress Toward Measles Elimination-South-East Asia Region, 2003-2020. *Morbidity and Mortality Weekly Report* , *71*(33), 1042–1046. https://stacks.cdc.gov/view/cdc/120144

Kusmawati, I. S., & Chandra, T. D. (2021). Stability analysis of SIRS epidemic model on measles disease spreading with vaccination and migration. *Journal of Physics: Conference Series*, *1872*(1). https://doi.org/10.1088/1742-6596/1872/1/012033

Maryati Sutarno, & Noka Ayu Putri Liana. (2019). Faktor-Faktor Yang Berhubungan Dengan Kejadian Ispa. *Jurnal Antara Keperawatan*, *2*(2), 44–50. https://doi.org/10.37063/antaraperawat.v2i2.76

Meilani, D., Martha, E., Pratomo, H., Hasanah, I. J., Sopamena, Y., & Rungreangkulkij, S. (2021). Analysis of measles vaccination refusal on social media (Facebook) among anti-vaccine communities in Indonesia. *Kesmas*, *16*(1), 21–27. https://doi.org/10.21109/KESMAS.V16I1.3478

Msiren, W., & Yuwono, P. (2018). Bonus Demografi Dan Pembangunan Industri Di Provinsi Papua. *Dinamika Ekonomi Rakyat*, *1*(1), 71–81.

Nurdiyan, A., & Ramadhanti, I. P. (2017). Education, Regulation, and Associations As a Solid Foundation for Midwifery Professionals. *Jurnal Kesehatan*, *9*(1), 19. https://doi.org/10.35730/jk.v9i1.344

Prabandari, G.A., Musthofa, S.B., & Kusumawati, a. (2018). Beberapa Faktor Yang Berhubungan Dengan Penerimaan Ibu Terhadap Imunisasi Measles Rubella Pada Anak Sd Di Desa Gumpang, Kecamatan Kartasura, Kabupaten Sukoharjo. *Jurnal Kesehatan Masyarakat (e-Journal)*, *6*(4), 573–581.

R. Pugu Melyana, M. Yani Yanyan, & Wardhana Wahyu. (2019). Pembangunan Infrastruktur Di Perbatasan Papua: Upaya Menjamin Human Security Dan Melawan Perdagangan Ilegal Lintas Bata. *Masyarakat Indonesia, Vol. 45 (1*, 76–92.

Rahmayani, S. A., Aldila, D., & Handari, B. D. (2021). Cost-effectiveness analysis on measles transmission with vaccination and treatment intervention. In *AIMS Mathematics* (Vol. 6, Issue 11). https://doi.org/10.3934/math.2021721

Rosadi, W., Sulaeman, E. S., & Prasetya, H. (2019). Multilevel Analysis on Factors Affecting Measles Rubella Immunization Uptake among Toddlers in Pekanbaru, Indonesia. *Journal of Maternal and Child Health*, *4*(6), 448–460. https://doi.org/10.26911/thejmch.2019.04.06.06

Shimizu, K., Teshima, A., & Mase, H. (2021). Measles and rubella during covid-19 pandemic: Future challenges in Japan. *International Journal of Environmental Research and Public Health*, *18*(1), 1–11. https://doi.org/10.3390/ijerph18010009

Teni Nurlatifah, H. R., Barlianto, W., Wiyasa, W. A., Kusuma, C., Sari, T. L., & Bachtiar, N. S. (2021). Determination Factors Associated with Immune Responses Towards First Dose Edmonston-Zagreb (EZ) Measles Vaccine in Indonesian Infants. *Medical Archives (Sarajevo, Bosnia and Herzegovina)*, *75*(5), 335–339. https://doi.org/10.5455/medarh.2021.75.335-

339

Teti, A. Y., & Jannah, M. (2022). Determinan Yang Berhubungan dengan Imunisasi Campak di Puskesmas Larangan Utara Kota Tangerang Tahun 2021. *Jurnal Bidang Ilmu Kesehatan*, *12*(1), 17–23. https://doi.org/10.52643/jbik.v12i1.2042

UN DESA. (2020). The Impact of COVID-19 on Indigenous Peoples. *Department of Economic and Social Affairs*, *70*, 2–5. https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/PB_70.pdf

Victor Tseng. (2021). COVID-19 Healthcare Delivery Impacts. *Tracie*, *April 2021*, 1–16. https://twitter.com/VectorSting/status/1244671755781898241%0Ahttps://files.asprtracie.hhs.gov/documents/covid-19-healthcare-delivery-impacts.pdf.

Winter, A. K., Lambert, B., Klein, D., Klepac, P., Papadopoulos, T., Truelove, S., Burgess, C., Santos, H., Knapp, J. K., Reef, S. E., Kayembe, L. K., Shendale, S., Kretsinger, K., Lessler, J., Vynnycky, E., McCarthy, K., Ferrari, M., & Jit, M. (2022). Feasibility of measles and rubella vaccination programmes for disease elimination: a modelling study. *The Lancet Global Health*, *10*(10), e1412–e1422. https://doi.org/10.1016/S2214-109X(22)00335-7

World Health Organization. (2018). *Measles Elimination and Rubella Control*. available online at https://www.who.int/southeastasia/activities/measles-and-rubella-elimination

Yonanda, V. (2022). Tatalaksana Campak. *Jurnal Medika Hutama*, *03*(02), 402–406.