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REDUCING INFANT AND UNDER-5 MORTALITY RATE THROUGH GOVERNMENT HEALTH EXPENDITURE: A SYSTEMATIC REVIEW

Penurunan Angka Kematian Bayi dan Balita dengan Belanja Kesehatan Pemerintah: Systematic Review

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Abstract

Background: Although it has been globally reported that IMR and U5MR continue to decline every year, the rate disparities between urban and rural areas are still evident in various countries. The government is presumed to carry out efforts to reduce this disparity, such as by allocating the government's health expenditure.
Aims: This study systematically identifies the effectiveness, best practices, and positive impacts of government health expenditure allocation for IMR and U5MR, specifically in rural areas.
Methods: This systematic review study was conducted using the PICOS method to analyse data that were obtained from 3 online databases.
Results: The government health expenditure could reduce the gap in mortality rate indicators between urban and rural areas. Programs specifically proposed for rural communities can help decrease the gap between urban-rural IMR and U5MR. The effectiveness of government health expenditure to reduce mortality rates was strongly influenced by various factors, including supporting policies, field implementation in regions, and the collaboration between the central and local governments.
Conclusion: The local government plays a definitely crucial role in the implementation of the health program to ensure that the central government executes the program effectively in order to reduce IMR and U5MR in rural areas.

Keywords: Child Health, Government Health Expenditure, Infant Mortality Rate, Under-5 Mortality Rate.

Abstrak

Latar Belakang: *Secara global, AKB dan AKBA terus menurun setiap tahunnya, akan tetapi disparitas antara perkotaan dan pedesaan masih terbukti terjadi di berbagai negara. Pemerintah memegang peranan yang krusial dalam menurunkan kesenjangan antara perkotaan dan pedesaan. Salah satu peranan tersebut adalah mengalokasikan dana pemerintah pada sektor kesehatan berupa belanja kesehatan pemerintah*
Tujuan: *Studi ini bertujuan untuk mengkaji secara sistematis mengenai efektifitas, 'best practices', dan besarnya manfaat yang dihasilkan dari belanja kesehatan pemerintah terhadap AKB dan AKBA, utamanya di daerah pedesaan.*
Metode: *Studi ini merupakan Systematic Review dengan menggunakan PICOS Methodology dan sumber pencarian yang digunakan adalah 3 database online.*
Hasil: *Belanja kesehatan pemerintah dapat mengurangi kesenjangan indikator angka kematian anak antara perkotaan dan pedesaan. Program yang secara khusus ditujukan untuk masyarakat pedesaan dapat mempercepat penurunan disparitas AKB dan AKBA perkotaan-pedesaan. Pencapaian belanja kesehatan pemerintah dalam menurunkan angka kematian sangat dipengaruhi oleh berbagai faktor diantaranya kebijakan pendukung, implementasi di daerah, dan keselarasan usaha pemerintah pusat dan daerah.*
Kesimpulan: *Posisi pemerintah daerah sangat krusial pada setiap pelaksanaan program kesehatan, sehingga setiap upaya yang dikeluarkan pemerintah pusat dalam menurunkan AKB dan AKBA di pedesaan harus selaras dengan usaha pemerintah daerah dalam mewujudkan keberhasilan tersebut.*

Kata kunci*: Angka Kematian Balita, Angka Kematian Bayi, Belanja Kesehatan Pemerintah, Kesehatan Anak*

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Introduction

IMR and U5MR are general indicators of health status of infants and under-5 children in certain areas. Currently, health issues among infants and children under-5 in rural areas continue to emerge globally. Although the mortality rate through the years has decreased, the gap of the rates between rural and urban areas is still considerable, inhibiting the success of child health programs (Kementerian PPN/ Bappenas and UNICEF, 2017). Babies living in rural Nigeria have a higher IMR compared to that of urban Nigeria (Adewuyi and Zhao, 2017). In China, IMR was found higher in inland and remote areas than in coastal areas (Wang *et al.*, 2012). This gap appears due to poor health systems, inadequate infrastructure, lack of skilled health personnel, socio-cultural factors, and difficulties to access health facilities in rural areas (Adewuyi and Zhao, 2017; Karki and Kittel, 2019). Furthermore, financial problems and parents' lack of knowledge about emergency health signs might also affect this gap in rural areas (Wang *et al.*, 2012).

Several recommendations have been proposed to address problems regarding infant and child mortality. These recommendations may vary, for examples, from government health programs in Indonesia (Hyre et al., 2019; Pedrana et al., 2019), or policies in India (Chaudhary, Rohilla, Kumar and Kumar, 2017; Gupta *et al.,* 2017) and Cuba (Bruns, Pawloski, and Robinson, 2019), or increasing health services and capacity (Russo *et al.*, 2019; Walker *et al.*, 2020), or conducting activities or programs that involve the community in certain areas (Houweling *et al.,* 2019; Nyqvist *et al.*, 2019; Pulkki-Brännström *et al.*, 2020).

These recommendations imply that the role of the government is definitely crucial in addressing high IMR and U5MR rates in rural areas. The government has been recommended to allocate government's health expenditure to improve the health status of infants and children. This fund can greatly improve public health including infants' and children's health. The fund allocated by the government for the health sector is also called the government's health expenditure.

In the last ten years, some published systematic reviews have examined the effects of government financing and policy on the improvement of health services for infants and children in rural areas. Some other reviews also describe the effects of the health intervention on IMR and U5MR. However, among several systematic reviews mentioned above, none of them specifically addressed the effect of government health expenditure on health services to reduce IMR and U5MR.

This research systematically examined the effectiveness, best practices, and the benefits of government health expenditure on infant and under-5 mortality rates, especially in rural areas. Government health expenditure includes wide context as health programs and special funding allocations for health.

Method

This study employed comprehensive search using specific keywords. Data were retrieved from online databases that included PubMed, Scopus, and ProQuest. These three online databases were free to access through the library at Universitas Indonesia. Problems were identified using the PICOS framework. PICOS methodology employed in this study is explained as follows. **P**opulation: Rural Community; **I**ntervention: Government Health Expenditure; **C**omparison: -; **O**utcome: IMR and U5MR; **S**tudy Type: All types of study except Systematic / Literature Review with/ without Meta-Analysis

After the PICOS had been compiled, the inclusion and exclusion criteria for the comprehensive search were determined (Table 1). It is important to note that this systematic review did not specify the location of the study since the researcher expected to analyze the characteristics of rural areas in various countries that have successfully allocated government health expenditure in reducing IMR and U5MR.

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The keywords used were a combination of the following terms: ((((spending) OR (expenditure)) AND ((government) OR (public))) AND ((((((neonatal) OR (newborn)) OR (infant)) OR (child)) OR (under-5)) AND ((health) OR (mortality)))) AND (rural). Manuscripts were selected journal articles, written in English and published between 2010-2020.

In the initial identification stage, a total of 54 journal articles were obtained, of which 17 were obtained from PubMed, 15 from Scopus, and 22 from ProQuest. The journal articles were then inserted to Mendeley Reference Manager to eliminate duplication of the same titles. The journal articles were manually sorted out again based on PICOS and inclusion criteria based on the title, abstract, and results. After the manual screening, a critical appraisal was carried out to assess the data. The critical appraisal was done using *SIGN Methodology Checklist 6 for Economy Evaluation*. This checklist is useful to help maintain methodological accuracy and consistency in assessing a paper. *The SIGN Methodology Checklist 6 for Economy Evaluation was developed based on the BMJ requirements by academics in the economic field* (Drummond and Jefferson, 1996).

There were six articles that were synthesized and analyzed. All of the selection processes of the six studies are illustrated in Figure 1. Further analysis and discussion in this research were not done using meta-analysis due to differences in methodology and clinical terms. Another reason for not using meta-analysis was due to the diversity of the population, study design, interventions, and the results of several studies (Cochrane, 2021).

Table 1. Inclusion and Exclusion Criteria

	Inclusion	Exclusion
Source	PUBMED, SCOPUS, PROQUEST	Other online database sources
Dates	August 2010 – August 2020	Other
Study Types	Other types of Study	Systematic/Literature Review with/without meta-analysis
Language	English	Other languages
Intervention	Government Health Expenditure	Other interventions
Outcome Measure	Effectivity, Key Policies, Challenges, Best Practices	Other
Population	Neonatal and Child Under-5 in Rural Area; and its Health Indicators	Other
Type of Publication	Academic Journal; Availability of Documents (free); Published through the area of Public Health	Other and paid-articles

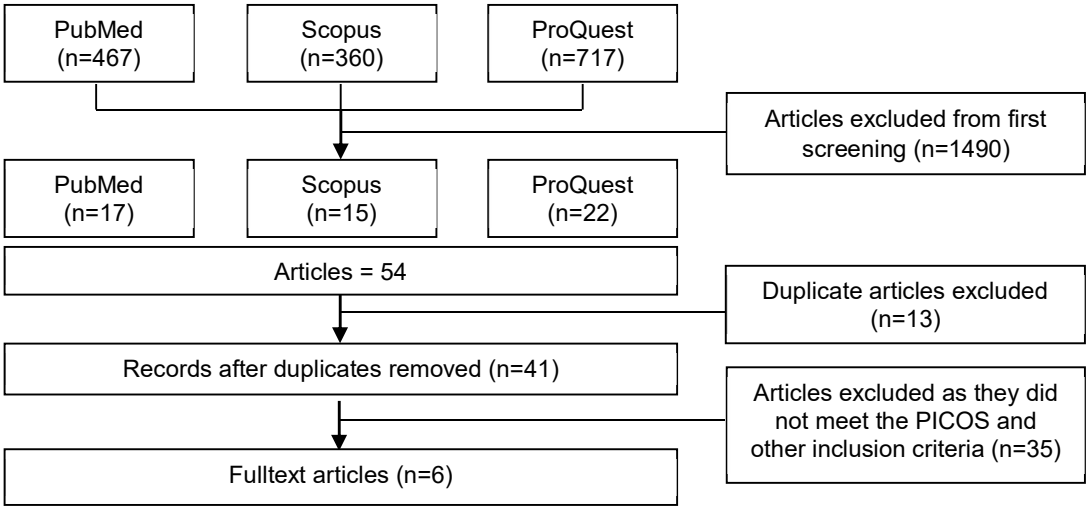

Figure 1. PRISMA Flowchart of the study

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Therefore, the description of the results in this study was narrated in the tabulation. However, all of the articles in this study were included despite their insignificant results to reduce a possible publication bias for a systematic study.

Results and Discussions

The findings of this study are summarized in Table 3. In general, the findings describe the relationship between government health expenditure and IMR and U5MR in rural areas. Of the six articles identified, five studies on government health expenditure concerning health status for infants and under-5 in rural areas were published between 2016-2020, and only one was published in 2013. The studies were conducted in Peru, China, and India. There was also one study that regarded data from 67 countries. Most of these papers are quantitative studies, except for the second (conducted in Peru) and fourth (conducted in Odisha, India) studies which were carried out using a mixed method. All these studies were limited to government health expenditure topics concerning the reduction of IMR and U5MR although in each study the other variables were examined.

Findings

The first paper regarded data from 67 countries with different income averages. The statistical analysis showed that the government health expenditure reduced the U5MR in rural areas. Other variables such as the mother's educational background and household income were also taken into consideration. The government health expenditure effectively assured the health services for people with higher risks (Li and Yuan, 2019).

Although the first paper did not further analyze causative factors that made government expenditure reduce child mortality in rural areas, the study identified that the health systems in some low-income countries mainly rely on external assistance. Different sources of government health expenditure can affect the effectiveness of health equity in the country (Li and Yuan, 2019).

The second and fifth studies were conducted in Peru. Peru is a country that is geographically divided into 3 regions : the Coast, Andes, and Amazon. This systematic review categorized Andes and Amazon as 'rural' areas since rural areas dominate the country, while poor populations mostly resided in these two areas.

The second paper analyzed the phenomena that occurred between 2000-2013. Based on its statistical analysis, the coverage of intervention in the Coast region was higher than that of the Andes and Amazon. However, the success of these 'rural' areas could be said to have increased significantly.

From 2000 to 2013, the Andes experienced the highest increase in intervention coverage compared to the Coast and Amazon. Furthermore, health indicators such as IMR and U5MR in the Andes experienced the most significant decline, followed by Amazon in the second place (Huicho, Segura, *et al.*, 2016).

Although the IMR and U5MR of the Coast remained the lowest, the intervention that had been done over the past 13 years by the government has narrowed the gap between the three regions. Peru has set various policies or programs to reduce maternal and child health disparities in urban and rural areas. Based on the analysis of qualitative data, a 'cash transfer' program started in 2005 namely JUNTOS was issued to help overcome intergenerational poverty by increasing access to education and health services. In its implementation, under-5 children were required to visit health and nutrition clinics to get vitamin A and iron supplementation as well as to undergo several services such as growth monitoring, regular immunizations, and deworming (Huicho, Segura, *et al.*, 2016). This program, which was targeted at poor rural residents, has increased the use of antenatal services for pregnant women (Díaz and Saldarriaga, 2019) and thus has given a positive effect on children's health (Huicho, Hernandez, *et al.,* 2018).

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Meanwhile, the results of the bivariate analysis in the fifth paper implied that greater amounts of government health expenditure is associated with smaller IMR and U5MR. However, the results of the multilevel ecological analysis did not show any significant differences between the Coast, Andes, and Amazon. The study noted that there were variations in spending between regions from time to time, but this study was unable to determine which regions had better child health service activities due to inconsistent variations.

It was assumed that the main cause for the non-regional outcome differences was the Peruvian government's health expenditure. It explains why regions with most cases were not given the highest priority. Other causes were decentralization, and limited implementation of central policies (Huicho, Hernandez, *et al.*, 2018). Another research in Peru also suggested that increasing health expenditure was hand in hand with political support for maternal and child health focusing on the poorest groups of the population (Huicho, Huayanay-Espinoza, Hernandez, Niño de Guzman, and Rivera-Ch, 2018).

The third study conducted in China found that the per capita income of rural communities and the proportion of government health expenditure shared a significant negative relationship with IMR. It implies that additional per capita income for rural communities and the proportion of government health expenditure could help reduce IMR. One of the proportions of government health expenditure is the investment in the medical sector. This study where GWR and spatial clustering were employed also analyzed possible economic factors that affect IMR in areas with different levels of development and local policies. Although IMR in China was better compared to 2010, the disparity between urban and rural areas, especially areas with the lowest economic development, remained difficult to eliminate. This challenge requires enormous investment and resources in these areas (Wang and Wu, 2020)

The fourth and sixth studies took place in India and discussed the NRHM using different approaches. NRHM is a scheme created by the central government that aims to reduce IMR in India by strengthening delivery services at the village level (Pandey and Mohan, 2019). Other programs have been launched under this scheme. Some of which aim to strengthen primary and community health centers, certified social health workers, and establish new health financing mechanisms (Gopalakrishnan and Immanuel, 2018).

The fourth study was conducted in Odisha, India, measuring SGCE and SGRE to see the effect of NRHM on health indicators such as IMR. The results suggested that since the NRHM policy took effect in Odisha, both government capital expenditures and revenues could significantly reduce IMR. In addition, the results of interviews and focused discussions showed that health facilities such as health care buildings and medical equipment had improved in terms of quantity and quality. Additional medical and health support personnel were then added after NRHM was implemented (Patra, Murthy and Rath, 2013).

The sixth paper specifically discussed the comparison between IMR based on pre- and post-NRHM. The results suggested that NRHM in India succeeded in reducing the IMR gap between urban and rural areas. This time-series analysis further explained a decrease in IMR several years before the implementation of NRHM which helped accelerate it (Pandey and Mohan, 2019).

Best Practices

Health expenditure as an economic resource is necessary to realize better health conditions (Servan-Mori, Avila-Burgos, Nigenda and Lozano, 2016). To achieve this goal, some important factors must go hand in hand to support one another. The following part describes the factors that make government health expenditure effective in reducing IMR and U5MR.

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Table 3. Articles related to Government Health Expenditure with IMR and U5MR in Rural Areas

No	Title	Location	Method	Findings	
				Unit Analysis	Results
1	Understanding the Effectiveness of Government Health Expenditure in Improving Health Equity: Preliminary Evidence from Global Health Expenditure and Child Mortality Rate	Up to 67 countries	Quantitative: Regression Analysis	Domestic general government health expenditure per capita (GHE) and External health expenditure per capita (EXT); Child mortality rate (neonatal, infant and under-5) - urban and rural areas	R^2 value of GHE and EXT was higher in rural areas than urban, both the neonatal, infant, and under-5 mortality rate variables.
2	Child Health and Nutrition in Peru within an Antipoverty Political Agenda: a Countdown to 2015 Country Case Study	Peru	Mix Method: Descriptive Statistic, Lives Saved Tool (LiST); Indepth Interview and Focus Group Discussion	Health intervention coverage, neonatal (NMR) and U5MR, under-5 stunting in Coastal, Andes, and Amazon (2000-2013)	It shows higher health intervention coverage and mortality rate at the Coastal region than Andes and Amazon. However, progress on NMR and U5MR reduction was faster in the Andes from 2000 to 2013
3	Spatial Heterogeneity of the Associations of Economic and Health Care Factors with Infant Mortality in China Using Geographically Weighted Regression	China	Quantitative: Spatial Autocorrelation Analysis, Geographically Weighted Regression (GWR) Model with Spatial Clustering	Per capita income of rural residents, Engel's coefficient of rural residents, proportion of government health expenditure; IMR	Per capita income of rural residents, Engel's coefficient of rural residents, and proportion of government health expenditure have significant correlation with IMR
4	An Evaluation of the National Rural Health Mission (NRHM) in Odisha	India	Mix Method: Multiple Regression Analysis with In Depth Interview and Focus Group Discussion	SGCE and SGRE; birth rate, crude death rate, and IMR	Regression Model shows that a 1% increase in SGRE and SGCE on medical, healthcare, and sanitation could reduce the IMR by 0,12 and 0,27 points respectively
5	Understanding Drivers of Domestic Public Expenditure on Reproductive, Maternal, Neonatal, and Child Health in Peru at District Level: an Ecological Study	Peru	Quantitative: Bivariate Correlation and Ecological Multilevel Analysis	Public expenditure (reproductive, maternal, neonatal and child health); Maternal, IMR and U5MR, under-5 stunting and unmet basic need Coast, Andes, and Amazon department	Public expenditure increased in areas with lower income inequality. IMR and U5MR were significantly negative correlations with health expenditure on maternal, neonatal, and child. The final multilevel model did not show statistical difference between departments
6	The Role of National Rural Health Mission in Reducing Infant Mortality Rate in India	India	Quantitative: Interrupted Time Series Analysis; Regression Analysis, with Durbin-Watson	NRHM: Pre-Post Intervention Time; IMR in Urban and Rural	The IMR difference between urban and rural was declined by 4 units. There are greater reduction of IMR trends in rural after the implementation of NRHM

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First, the improvement of government health expenditure effectiveness in improving the health status of areas with certain conditions has to be supported by good policies and political conditions. In Peru, when the recommendation was implemented, the IMR decreased by 50% between 2000-2013. Peru's success in reducing IMR shows that political transition and strong political will can encourage broad participation of various parties and also lead to the determination of sustainable macro policies. Thereby, such conditions will eventually affect the implementation of health and anti-poverty programs for reducing IMR and U5MR (Huicho, Segura, *et al.*, 2016). Moreover, political commitment and leadership along with strong community participation can be the key to lowering the gap between IMR and U5MR. Community participation contributes to the implementation of policies regarding health programs / interventions determined by the government (Huicho, Huayanay-Espinoza, *et al.*, 2016; Huicho, Segura, *et al.*, 2016).

Political policies and adequate support have a major influence on the use of the health budget. As stated in the first study, several challenges occur regarding the implementation of supporting policies. These issues can vary from different priority of political and public interests, pressure on implementing agencies, and transparency-related issues (Li and Yuan, 2019). Other studies also suggested that decisions or policies taken by local governments greatly affected health expenditure for improving infant and child health services (Gupta *et al.,* 2017; Huicho, Hernandez *et al.,* 2018; Jimenez Soto *et al.,* 2013).

Second, the success of infant and under-5 programs is greatly influenced by the implementation in local areas. As an example, the implementation of NRHM in Odisha, India brought major impacts. The decrease in IMR in the Odisha area could be attributed to the good implementation of NRHM supported by two other policies. These policies are **called the Patient** Welfare Committee or Rogi Kalyan Samiti (RKS) and Safe Motherhood Program or Janani Suraksha Yojana (JSY) (Patra *et al.,* 2013). RKS is a facility-based mechanism created by the government to improve hospital management structure with greater autonomy in decision-making (functional, administrative, and financial) (Adsul and Kar, 2013; Nongdrenkhomba, Prasad, Baishya and Shome, 2015). Meanwhile, JSY helps increase the success of health institutions by reducing maternal mortality with a conditional cash transfer scheme (Mukhopadhyay *et al.,* 2018). The combination of different policies resulted in higher income and capital expenditures.

However, the implementation of NRHM in different regions suffered from some problems. Another research on NRHM in India determined issues related to underutilization and overutilization of health budgets in several regions. The reasons for the underutilization of health budgets include the late distribution of funds from the central government, poor program planning, differences in budget use priorities, and the inability of regions to use the budget effectively. On the other hand, the reason for the overutilization could be because of the flexibility of NRHM funds and the government choosing to provide additional funds from this set health budget (Gupta *et al.,* 2017). Based on these findings, it can be concluded that the same amount of health expenditure can have different impacts in different regions.

Third, the harmony between the central and local governments is crucial in the allocation of children's health funds. Peru is a good example in this regard. Although the implementation of health programs to reduce IMR and U5MR still finds obstacles in some local government authorities at the national level, it is clear that the outcomes of its health programs are evident as Peru is a country with one of the fastest decreases in IMR in the world (Huicho, Hernandez, et al., 2018; Huicho, Segura, et al., 2016). The key factor to this success is the fact that Peru has succeeded in reducing the poverty gap between regions, both urban and rural. The Peruvian government takes an equity lens approach, where it identifies high-risk populations in the Andes and Amazon, then carries out multi sectoral interventions on target populations such as the JUNTOS program. This reduction in the poverty gap

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has a very important impact on the implementation of health programs due to the tendency for new health programs to outreach richer urban residents first before finally reaching the rest of the country (Huicho, Segura, et al., 2016). It can be concluded that an increase in child health expenditure can be supported by other mutual programs beneficial to the health sector.

Limitations

This study suffers from several limitations. First, most of the articles reviewed in this research were quantitative studies. Consequently, the discussion regarding the effectiveness and best practices were not thorough. Moreover, only three online databases were used. Second, based on the results, this study did not examine in detail the sources of funds obtained by the government. In addition, this systematic review did not discuss the different types of expenditure, such as revenue and capital health expenditure. Third, this study has not been able to ascertain the ideal amount of government expenditure that should be allocated for the health services for infants and under-5s in comparison to the total expenditure in a given region. Finally, the health systems analyzed in this review did not thoroughly describe the global conditions as this study was limited to six studies where four of which were only conducted in India and Peru. It is expected that these limitations can be addressed in future studies.

Conclusions

It is concluded that six studies on the reduction of IMR and U5MR with government health expenditure were included. The government health expenditure devoted to more vulnerable populations such as rural communities could effectively reduce IMR and U5MR. However, it should be emphasized that the effectiveness of central government health expenditure for children's health is affected by several factors. These factors can vary from policies-related factors and political conditions that are specifically relevant to the use of child health funds, local government's responses to fund health activities in the regions, and consistent efforts between the central and local governments to reduce IMR and U5MR.

Referring to rural residents, the local government holds a crucial role since their geographical proximity allows them to have a more comprehensive understanding of the problems. These institutions should collaborate to successfully carry out the health programs to reduce IMR and U5MR and thus improve their health status. The findings of this systematic review could be references for developing countries to wisely use state health expenditures for public health measures.

Large expenditure budgets will not effectively reduce IMR and U5MR without proper distribution and management. The researcher strongly recommends future researchers to address some limitations of this study. At last, the researcher expects that this study makes valuable insights for stakeholders and policymakers in making efforts to reduce IMR and U5MR in rural areas.

Abbreviations

IMR: Infant Mortality Rate; UM5R: Under 5 Mortality Rate; PICOS: Population–Intervention–Comparison–Outcome–Study Type; NRHM: National Rural Health Mission; SGCE: State Government Capital Expenditure; SGRE: State Government Revenue Expenditure.

Declarations

Ethics Approval and Consent Participant

Not applicable

Conflict of Interest

This study does not conflict with anyone's interest.

Availability of Data and Materials

The availability of data and materials based on demand from journals and authors.

Authors' Contribution

ASP and ACS conceptualized the theme of the study; ASP did the Systematic Review

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process, wrote, and edited the original draft. ACS reviewed the manuscript.

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References

Adewuyi, E.O. and Zhao, Y. (2017) 'Determinants of Neonatal Mortality in Rural and Urban Nigeria: Evidence from a Population-Based National Survey', *Pediatrics International*, 59(2), pp. 190–200. doi:10.1111/ped.13086.

Adsul, N. and Kar, M. (2013) 'Study of rogi kalyan samitis in strengthening health systems under national rural health mission, district pune, maharashtra', *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine*, 38(4), pp. 223–228. doi:10.4103/0970-0218.120157.

Bruns, D.P., Pawloski, L. and Robinson, C. (2019) 'Can Adoption of Cuban Maternity Care Policy Guide the Rural United States to Improve Maternal and Infant Mortality?', *World Medical & Health Policy*, 11(3), pp. 316–330. doi:10.1002/wmh3.312.

Chaudhary, S. *et al.* (2017) 'Evaluation of Janani Shishu Suraksha Karyakram scheme and out of pocket expenditure in a rural area of Northern India.', *Journal of family medicine and primary care*, 6(3), pp. 477–481. doi:10.4103/2249-4863.222010.

Cochrane (2021) *Cochrane Handbook for Systematic Reviews of Interventions version 6.2 (Updated February 2021)*. Edited by J. Higgins et al. Cochrane. Available at: www.training.cochrane.org/handbook.

Díaz, J.-J. and Saldarriaga, V. (2019) 'Encouraging use of prenatal care through conditional cash transfers: Evidence from JUNTOS in Peru', *Health Economics*, 28(9), pp. 1099–1113. doi:10.1002/hec.3919.

Drummond, M.F. and Jefferson, T.O. (1996) 'Guidelines for authors and peer reviewers of economic submissions to the BMJ. The BMJ Economic Evaluation Working Party.', *BMJ (Clinical research ed.)*, 313(7052), pp. 275–283. doi:10.1136/bmj.313.7052.275.

Gopalakrishnan, S. and Immanuel, A.B. (2018) 'Progress of health care in rural India: a critical review of National Rural Health Mission', *International Journal of Community Medicine and Public Health*, 5(1), pp. 4–4.

Gupta, M. *et al.* (2017) 'Utilization of Intergovernmental Funds to Implement Maternal and Child Health Plans of a Multi-Strategy Community Intervention in Haryana, North India: A Retrospective Assessment.', *PharmacoEconomics - open*, 1(4), pp. 265–278. doi:10.1007/s41669-017-0026-3.

Houweling, T.A.J. *et al.* (2019) 'The equity impact of community women's groups to reduce neonatal mortality: a meta-analysis of four cluster randomized trials', *International Journal of Epidemiology*, 48(1), pp. 168–182. doi:10.1093/ije/dyx160.

Huicho, L., Segura, E.R., *et al.* (2016) 'Child health and nutrition in Peru within an antipoverty political agenda: a Countdown to 2015 country case study.', *The Lancet. Global health*, 4(6), pp. e414-26. doi: 10.1016/S2214-109X(16)00085-1.

Huicho, L., Huayanay-Espinoza, C.A., *et al.* (2016) 'Examining national and district-level trends in neonatal health in Peru through an equity lens: a success story driven by political will and societal advocacy', *BMC Public*

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10.20473/jaki.v10i1.2022.122-132

Health, 16, pp. 103–117. doi:10.1186/s12889-016-3405-2.

Huicho, L., Huayanay-Espinoza, × Carlos A, *et al.* (2018) 'Enabling reproductive, maternal, neonatal and child health interventions: Time trends and driving factors of health expenditure in the successful story of Peru', *PLoS One*, 13(10). doi:10.1371/journal.pone.0206455.

Huicho, L., Hernandez, P., *et al.* (2018) 'Understanding drivers of domestic public expenditure on reproductive, maternal, neonatal and child health in Peru at district level: an ecological study', *BMC Health Services Research*, 18. doi:10.1186/s12913-018-3649-x.

Hyre, A. *et al.* (2019) 'Expanding maternal and neonatal survival in Indonesia: a program overview', *International Journal of Gynecology & Obstetrics*, 144, pp. 7–12.

Jimenez Soto, E. *et al.* (2013) 'Investment case for improving maternal and child health: results from four countries.', *BMC public health*, 13, pp. 601–601. doi:10.1186/1471-2458-13-601.

Karki, B.K. and Kittel, G. (2019) 'Neonatal mortality and child health in a remote rural area in Nepal : a mixed methods study', *BMJ Paediatrics Open* [Preprint]. doi:10.1136/bmjpo-2019-000519.

Kementerian PPN/Bappenas and UNICEF (2017) *Laporan Baseline SDG tentang Anak-Anak di Indonesia*. Jakarta. Available at: https://www.unicef.org/indonesia/sites/unicef.org.indonesia/files/2019-06/SDG_Baseline_report Indonesian.pdf.

Li, J. and Yuan, B. (2019) 'Understanding the effectiveness of government health expenditure in improving health equity: Preliminary evidence from global health expenditure and child mortality rate.', *The International journal of health planning and management*, 34(4), pp. e1968–e1979. doi:10.1002/hpm.2837.

Mukhopadhyay, D.K. *et al.* (2018) 'Exploring the Bottlenecks: An Assessment of the Implementation Process of Janani Suraksha Yojana in the State of West Bengal, India', *International Journal of Medicine and Public Health*, 8(1), pp. 29–33. doi:10.5530/ijmedph.2018.1.6.

Nongdrenkhomba, H.N. *et al.* (2015) 'Local governance system for management of public health facilities: Functioning of Rogi Kalyan Samiti in North Eastern States of India', *South East Asia Journal of Public Health*, 4(2), pp. 16–22. doi: 10.3329/seajph.v4i2.23690.

Nyqvist, M.B. *et al.* (2019) 'Reducing child mortality in the last mile: Experimental evidence on community health promoters in Uganda', *American Economic Journal: Applied Economics*, 11(3), pp. 155–192. doi:10.1257/app.20170201.

Pandey, A. and Mohan, A. (2019) 'The role of national rural health mission in reducing infant mortality rate in India', *International Journal of Health Governance*, 24(1), pp. 56–65. doi:10.1108/IJHG-09-2018-0044.

Patra, S.K., Murthy, D.S. and Rath, S. (2013) 'An Evaluation of the National Rural Health Mission (NRHM) in Odisha', *Journal of Health Management*, 15(3), pp. 471–480. doi:10.1177/0972063413491880.

Pedrana, A. *et al.* (2019) 'Assessing the effect of the Expanding Maternal and Neonatal Survival program on improving stabilization and referral for maternal and newborn complications in Indonesia', *International Journal of Gynecology and Obstetrics*, 144, pp. 30–41. doi:10.1002/ijgo.12733.

Pulkki-Brännström, A.-M. *et al.* (2020) 'Participatory learning and action cycles with women s groups to prevent neonatal death in low-

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p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v10i1.2022.122-132

resource settings: A multi-country comparison of cost-effectiveness and affordability.', *Health policy and planning* [Preprint]. doi:10.1093/heapol/czaa081.

Russo, L.X. *et al.* (2019) 'Primary care physicians and infant mortality: Evidence from Brazil', *PLOS ONE*, 14(5), pp. e0217614–e0217614. Available at: https://doi.org/10.1371/journal.pone.0217614.

Servan-Mori, E. *et al.* (2016) 'A Performance Analysis of Public Expenditure on Maternal Health in Mexico', *PLoS One*, 11(4). doi:10.1371/journal.pone.0152635.

Walker, D. *et al.* (2020) 'Effect of a quality improvement package for intrapartum and immediate newborn care on fresh stillbirth and neonatal mortality among preterm and low-birthweight babies in Kenya and Uganda: a cluster-randomised facility-based trial', *The Lancet Global Health*, 8(8), pp. e1061–e1070. doi: 10.1016/S2214-109X(20)30232-1.

Wang, S. and Wu, J. (2020) 'Spatial heterogeneity of the associations of economic and health care factors with infant mortality in China using geographically weighted regression and spatial clustering.', *Social science & medicine (1982)*, 263, pp. 113287–113287. doi: 10.1016/j.socscimed.2020.113287.

Wang, Y. *et al.* (2012) 'Geographical disparities of infant mortality in rural China', *Archives of Disease in Childhood-Fetal and Neonatal Edition*, 97(4), pp. F285–F290.