



Evaluation of the Implementation of Integrated Management of Childhood Illness in Special Region of Yogyakarta Province, Indonesia

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Abstract

BACKGROUND: Child mortality rate in Indonesia is now fluctuating. The Province of the Special Region of Yogyakarta (DIY) had fluctuated infant mortality rate in the recent years. As a result, guidelines of Integrated Management of Childhood Illness (IMCI) are still required to improve the health of Indonesian children.

AIM: This study aimed to explore the implementation of IMCI in DIY Province in terms of input, process, and output components.

METHODS: A case study approach with a qualitative method was conducted among implementers of IMCI in the DIY Province. The data were obtained from secondary sources, such as the reports, attendance lists, and focus group discussion video recordings.

RESULTS: The results were differentiated by input, process, and output components. Most IMCI implementers have not received special training (input); there were no specific guidelines for sick children during the COVID-19 pandemic (process); and the IMCI implementation target has not been achieved with the percentage below 60–70% (output).

CONCLUSION: The implementation of IMCI in Yogyakarta Province is still required to improve the quality of services provided to sick children.

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Introduction

The Indonesian Demographic and Health Survey stated that child mortality in Indonesia stagnated from 2000 to 2012 [1]. However, in 2017, the neonatal mortality rate was 15/1,000 live births, the infant mortality rate was 24/1,000 live births, and the children under-five mortality rate was 32/1,000 live births; all of which were lower than in 2016. The neonatal death rate is predicted to decrease to 10/1,000 live births by 2024, while infant mortality is expected to decrease to 16/1,000 live births. Meanwhile, by 2030, the death rate for children under-five is predicted to decrease to 18.8/1,000 live births. Meanwhile, guidelines of Integrated Management of Childhood Illness (IMCI) are still required to improve the health of Indonesian children [2].

From 2014 to 2019, the number of incidents of infant mortality in DIY fluctuated. In 2014, there were

405 cases of infant death in DIY. The number of cases then dropped to 329 in 2015 and 278 in 2016. However, the number of cases increased to 313 in 2017 and 318 in 2018. In 2019, there were 315 cases. Bantul Regency had the greatest rate of infant death (110 cases), while Yogyakarta City had the lowest rate (25 cases) [3].

An analytic review was done in 2021 by the Department for International Development, United Nations Children's Fund (UNICEF), United States Agency for International Development, and the World Health Organization (WHO) to determine the contribution of IMCI in improving child health and the efforts required to achieve larger coverage and impact. According to the findings of the review, the Indonesian IMCI currently lacks key elements such as funding, logistics, equipment, monitoring procedures, and communication strategies that would enable it to be implemented successfully. IMCI training is seen to be helpful in improving health workers' abilities,

the quality of services provided to sick children who visit first-level health facilities, and the satisfaction of parents or families who take sick children. In terms of the health system, IMCI has succeeded in having children's medicines added to the list of essential medicines [4].

A qualitative study in South Africa reported that the most significant challenge in adopting IMCI was the length of consultations. This is a concern in health-care facilities with limited human resources [5]. There are numerous ways that can be used to evaluate the implementation of IMCI. A questionnaire created by the WHO and UNICEF was utilized as the approach. The implementation of three components, namely, the competence of health workers, the quality of health facilities, and the involvement of families and communities, was examined using the questionnaire [6]. In addition, Pradhan *et al.* [7] employed a hybrid approach, including in-depth interviews with policymakers and surveys using a WHO-adapted health facility evaluation methodology. Another study applied the WHO's six-structure development technique, which had been split into two parts, input and process. This method revealed how IMCI was implemented in 52 cities across South Africa [8].

The standard indicators utilized in giving the IMCI assessment are input, process, and output indicators, which are based on the Regional Child Survival Strategy. The use of standardized indicators in IMCI monitoring and evaluation can assist policymakers in obtaining data which can later be compared across regions [9]. In Indonesia, the public health centers are known as *Puskesmas*. *Puskesmas* are Indonesia's first gate of access for health-care services. Based on Health Facility Research in 2011, IMCI has been applied by 79.6% of *Puskesmas* in Indonesia [10]. During January–August 2020, the number of *Puskesmas* using IMCI increased to 77.08%. Meanwhile, based on the monitoring and evaluation of IMCI in 2016, the compliance score of officers in the implementation of IMCI was 50.9% with the lowest score in the counseling section (25.8%) [10].

The child mortality rate in Yogyakarta Province is now fluctuating, and IMCI implementation still remains low. This is a problem that has to be addressed. As part of an effort to improve children's health, the success of the IMCI implementation should be routinely evaluated. Accordingly, this research was conducted to see how IMCI was implemented at the Public Health Centers in DIY Province.

Methods

This study used a qualitative method with a case study approach. It aims to explore the implementation

of IMCI in DIY Province in terms of input, process, and output components. Focus Group Discussions (FGDs) were chosen as the method of data collection, because they are regarded as adequate and efficient in terms of time for obtaining in-depth information from informants. The Medical and Health Research Ethics Committee Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada – Dr. Sardjito General Hospital approved this study with number: KE/FK/1330/EC/2021. Written informed consent was obtained from all participants.

The study was conducted in DIY Province on February 16th, 2021. The participants in this study were the coordinators and implementers of IMCI in the DIY Province who are appointed by the DIY Provincial Health Office. DIY Province has five District Health Offices, where there are several *Puskesmas* participating in each district. The *Puskesmas* in this study were chosen by the IMCI Coordinator at the District/City Health Office in the Province of DIY after an evaluation of IMCI implementation in five districts/cities. Participants were chosen based on the following inclusion criteria: (1) IMCI coordinator officer at the DIY Provincial Health Office; (2) IMCI coordinating officer at the Yogyakarta City Health Office; (3) IMCI coordinating officer at the Bantul, Sleman, Gunung Kidul, and Kulon Progo District Health Offices; and (4) IMCI implementer at *Puskesmas* in DIY Province. In total, 27 participants contributed in this study. The participants were from Yogyakarta City Health Office (5), Bantul District Health Office (5), Sleman District Health Office (4), Gunung Kidul District Health Office (5), and Kulon Progo District Health Office (8).

The data for this study were obtained from secondary sources, such as the reports, attendance lists, and FGD video recordings kept by the IMCI Revision Team for 2020–2021. FGDs were held using the Zoom meeting platform for 3 h. The IMCI Revision Team had prepared a list of questions from the input, process, and output components. Under the guide of the leader, each informant in the discussion was free to share his/her views. This data collecting was continued until the discussion reached data saturation.

Source triangulation was used to ensure data validity. Member-checking was performed, with the purpose of ensuring that the information obtained and used in creating the report that was consistent with the data source's purpose. In addition, the study's findings were examined for transferability to see if they can be applied to other groups. The dependability test was done by conducting an audit of the entire research process. The qualitative data analysis in this study began with the transcription of the results of FGDs about IMCI implementation in the DIY Province. The data were then summarized using categories or category relationships. The codes were modified based on the outcomes of the survey.

Results

The implementation of IMCI in DIY Province was differentiated by input, process, and output components. Each component is described below.

Input

IMCI is conducted by *Puskesmas* with the support of mostly midwives and a few nurses. Doctors and dietitians were also involved, but only for follow-up consultations. Not all of the IMCI implementers have received special training, and some only participated in socialization or self-study through the IMCI Computerized Adaptation and Training Tool (ICATT) application. Because IMCI training is not conducted on a regular basis, the most recent IMCI implementer only completed it in 2015.

Although most *Puskesmas* have a dedicated IMCI clinic, other *Puskesmas* integrate IMCI services with a general polyclinic and Mother and Children's Health polyclinic. The *Puskesmas* generally use funds from the Regional Revenue and Expenditure Budget (APBD), non-physical Special Allocation Funds (DAK), and Regional Public Service Agency (BLUD) to execute IMCI. Internal audits, mini-workshop meetings, and coordination meetings with the health office were used to evaluate the implementation of IMCI.

Process

The service flow used is an approach to children who are ill. During the COVID-19 pandemic, there were no specific guidelines for sick children. Children who were ill with symptoms of fever, cough, and runny nose are directed to the infection polyclinic or special polyclinic. It was also reported that during the pandemic, there was a decrease in visits by sick children. Meanwhile, the IMCI polyclinic was opened specifically for healthy children. Internal evaluations are done in various ways, either every 3 months, 6 months, or once a year. The indicators that were evaluated included compliance with the standard operational procedure for IMCI implementation, data on visit coverage, accuracy of filling out forms, and any chart classification found. Based on the need for drugs and equipment, many drug preparations and tools are not available, especially for malaria drugs, which are only available at *Puskesmas* located in malaria endemic areas.

Output

The IMCI implementation target has not been achieved with the percentage below 60–70%. Furthermore, due to the pandemic crisis, the implementation of IMCI in numerous locations was stopped. Pediatric patients were referred to the

emergency room or an infectious polyclinic which did not follow the IMCI standards.

The following are some of the obstacles to the IMCI's implementation:

- a. It is difficult to follow-up the patients. The majority of the recovered patients did not return for treatment or did not return for follow-up appointments as suggested.
- b. Brief counseling was provided in response to the complaint, but not in accordance with the IMCI chart.
- c. Human resources, some of whom, are unfamiliar with the entire IMCI program.

Recommendations from participants

- a. Recommendations related to IMCI training
Participants suggested that the IMCI training should be given to health-care providers routinely. The training method preferred was face-to-face method due to the effectiveness, instead of online, or blended learning method which could be hindered by Internet connection. The head of each primary health care also should be trained or socialized with IMCI since the IMCI implementation has to be supervised by stakeholders who understand the IMCI. This training needs a special budget for IMCI training. In addition, the ICATT application should be updated according to the latest IMCI version because it is a beneficial tool for health-care providers to learn IMCI.
- b. Recommendations related to facilities supporting IMCI implementation
All primary health care should be informed about medicines and facilities needed to support IMCI implementation. Hence, all primary health-care centers would have equal standards in medicines and facilities.
- c. Recommendations related to a special circumstance

During COVID-19 pandemic, the participants recommended that procedures about IMCI case management related to COVID-19 should be delivered and trained to health-care providers. Thus, health-care workers who implement IMCI would have thorough understanding in managing special cases, such as COVID-19 using the IMCI approach.

Discussion

Input

Different from IMCI implementation in DIY where IMCI was performed by midwives and nurses,

Mansur [11] in North Jakarta stated that the health-care personnel who were responsible for IMCI were dominated by doctors and nurses. Meanwhile, Rahmah and Astuti [12] stated that IMCI implementers in several *Puskesmas* in Yogyakarta City and Bantul District were general practitioners and nurses. According to the Indonesia Ministry of Health, midwives and nurses should hold more responsibilities to conduct assessments rather than doctors who are only partially involved in the consultation part.

The lack of IMCI training has an impact on implementation in the field. This result of this study was similar to Zulaikha *et al.* [13] who also found that 87% of the health-care personnel implemented IMCI incompetently due to their insufficient amount of training. Based on a previous study, Rahmah and Astuti [12] reported that IMCI training was still lacking since there was a gap between the number of trained officers and patients. Survey results showed that the IMCI training only reached 71.4% in Bantul and 85.7% in Yogyakarta City. Importantly, the IMCI training could increase knowledge, ability, and skills of personnel, leading to better implementation of IMCI in primary health care. In addition, based on studies by Steinhardt *et al.* [14] and Zulaikha *et al.* [13], non-routine follow-up training improved the ability of the health-care providers to perform all the IMCI's steps competently.

This study revealed some IMCI implementers learned independently through the ICATT application, because the most recent conventional training was held more than 5 years ago. Based on the standards of IMCI training, the Ministry of Health should regularly conduct conventional training and ICATT training [15]. However, a study in West Java reported only 43% of all *Puskesmas* had health providers trained in IMCI and 58% had on-the-job training [16]. Training implementation faced several obstacles including the high cost to organize standard training [17], [18]. A study in Tanzania showed that distance learning made no difference in IMCI implementer performance in evaluating main symptoms, treating sick children, and giving counseling, while indicating, there was better recognition of danger signs remotely [17].

Process

The IMCI guidelines aim to examine and treat children's illness holistically. A previous study stated only 76% of all *Puskesmas* implement the IMCI chart and only 65% implement it for all sick children [16]. In Yogyakarta City, the percentage of IMCI service processes was only 40–80%, while in Bantul District, it was 65–90% [12]. During the COVID-19 pandemic, there has been a decrease in IMCI polyclinic visits, because sick children with certain symptoms are directed to infectious or special polyclinics which do not implement the IMCI approach.

Sudden changes in duties without proper training for health providers can lead to demotivation in implementing IMCI. This recognized trend was in accordance with a study by Rohayati *et al.* [19] which stated that not only providing proper facilities would influence IMCI implementation, but also the IMCI providers' motivation and self-awareness. Mansur [11] also found that motivation led to desire to achieve the aim of IMCI implementation, especially when the supervision gave extra support.

IMCI could be implemented properly when it is supported by numerous factors, such as drugs and equipment. This support is provided by the government. When there is limitation to those, the IMCI implementation is hindered. Renosa *et al.* [20] found that major barriers to successfully implementing IMCI were due to non-enabling and unsupportive health systems in several areas, for example, supplies. This study identified limited availability of the WHO listed essential medicines in *Puskesmas*. These findings are in accordance to previous study that showed, some of the main barriers are insufficient drug supply as stated by 15% of the IMCI implementers and limited infrastructure as stated by 56% of the IMCI implementers [16].

Output

The target of the IMCI implementation has not been achieved with a low percentage. Based on a previous study in Yogyakarta, Rahmah and Astuti [12] stated that output activities are fulfilled by *Puskesmas* for only 60% of toddler visits by implementing IMCI.

The IMCI chart provides a guide on classification, treatment, and detailed education related to children's illness. However, the IMCI implementation has obstacles. First, IMCI consultation needs a longer time [18]. To save time, the health workers do not always follow the chart by delivering brief and concise education based on the main complaint only. From the interviews with health workers, 76% said that the implementation of IMCI tends to have a longer duration of examination [16]. Another study showed that IMCI consultation needs a longer time since there are only a few nurses who are trained with IMCI [18]. Second, the high cost of IMCI training leads to low coverage of IMCI training and the limited number of skilled health workers [16], [18]. Third, the facilities are inadequate, for instance, the primary health-care centers do not conduct observation of first-dose treatment nor have rehydration corners [18]. Fourth, the low awareness of IMCI implementation could also hinder the IMCI implementation [16]. Based on the IMCI chart, sick children should be managed and recommended to revisit the health centers to be re-evaluated. However, this study showed that the majority of recovered patients did not return for follow-up appointments which caused difficulty in evaluation of the treatment outcome.

Finally, related to client expectation, non-IMCI-trained nurses tend to manage the cases in a shorter time, because they do not use a holistic approach to treat the patients [18].

Conclusion

The implementation of IMCI in Yogyakarta Province is still required to improve the quality of services provided to sick children. Most of the IMCI implementers have not received specialized training. During the COVID-19 pandemic, there were no specific guidelines for sick children so that there was a decrease in visits by sick children. As a result, the IMCI implementation target has not been achieved with the percentage below 60–70%.

To overcome this condition, the IMCI training should be given to health-care providers routinely. Because of its effectiveness, face-to-face training was chosen over online learning, which could be hindered by a poor Internet connection. To support IMCI implementation, all primary health-care personnel should be informed about medicines and facilities needed in IMCI implementation. In addition, procedures about IMCI case management related to COVID-19 should be delivered and trained to health-care providers during the COVID-19 pandemic.

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Authors' Contributions

FH was involved in study design, data collection, data interpretation, and manuscript writing; ISL was involved in study design, data collection, data interpretation, and manuscript review; EA was involved in study design, data collection, data interpretation, and manuscript review; SAW was involved in data collection, manuscript writing and editing; NAA was involved in data collection, writing and editing; and NR was involved in data collection, manuscript writing and editing. All authors have read and approved the final version of the manuscript.

References

1. Central Bureau of Statistics. Indonesian Demographic and Health Survey 2017 in Yogyakarta. Yogyakarta: Central Bureau of Statistics; 2018.
2. Indonesia Ministry of Health. Indonesia Health Profile in 2019. Indonesia: Indonesia Ministry of Health; 2020. Available from: <https://www.pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/profil-kesehatan-indonesia-2019.pdf> [Last accessed on 2021 May 14].
3. DIY Health Office. Yogyakarta Special Province Health Profile 2019. Indonesia: DIY Health Office; 2020. Available from: <https://www.dinkes.jogjaprovo.go.id/litkes> [Last accessed on 2021 May 14].
4. WHO. The Analytic Review of the Integrated Management of Childhood Illness Strategy. Geneva: WHO; 2003. Available from: <https://www.apps.who.int/iris/bitstream/handle/10665/42965/9241591730.pdf?sequence=1> [Last accessed on 2021 May 14].
5. Horwood C, Voce A, Vermaak K, Rollins N, Qazi S. Experiences of training and implementation of integrated management of childhood illness (IMCI) in South Africa: A qualitative evaluation of the IMCI case management training course. *BMC Pediatr*. 2009;9(1):62. Available from: <https://www.biomedcentral.com/articles/10.1186/1471-2431-9-62> [Last accessed on 2022 Jan 11].
6. Boschi-Pinto C, Labadie G, Dilip TR, Oliphant N, Dalglish SL, Aoubaker S, *et al*. Global implementation survey of integrated management of childhood illness (IMCI): 20 years on. *BMJ Open*. 2018;8(7):e019079. Available from: <https://www.bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2017-019079> [Last accessed on 2022 Jan 11].
7. Pradhan NA, Rizvi N, Sami N, Gul X. Insight into implementation of facility-based integrated management of childhood illness strategy in a rural district of Sindh, Pakistan. *Glob Health Action*. 2013;6(1):20086. <https://doi.org/10.3402/gha.v6i0.20086> PMID:23830574
8. Pandya H, Slemming W, Saloojee H. Health system factors affecting implementation of Integrated Management of Childhood Illness (IMCI): Qualitative insights from a South African province. *Health Policy Plan*. 2018;33(2):171-82. <https://doi.org/10.1093/heapol/czx154> PMID:29161375
9. WHO. IMCI Monitoring and Evaluation. Geneva: WHO; 2013. Available from: https://www.iris.wpro.who.int/bitstream/handle/10665.1/5364/9789290615361_package8_eng.pdf [Last accessed on 2021 May 14].
10. Suparmi S, Maisya IB, Rizkianti A, Sari K, Rosha BC, Amaliah N, *et al*. Integrated management of children illness at health centers in Eastern Indonesia. *MPK*. 2018;28(4):271-8. Available from: <https://www.ejournal2.litbang.kemkes.go.id/index.php/mpk/article/view/125> [Last accessed on 2022 Jan 11].
11. Mansur H. Evaluation of the integrated management of children illness at health centers in North Jakarta district 2015. *Midwives Sci J*. 2017;2(2):7.
12. Rahmah R, Astuti Y. The implementation of integrated management of children illness in primary health community in Yogyakarta, Indonesia. *Open Access Maced J Med Sci*. 2021;9(T4):315-8. Available from: <https://www.oamjms.eu/index.php/mjms/article/view/5808> [Last accessed on 2022 Jan 11].
13. Zulaikha F, Triasih R, Purwanta P. Knowledge and implementation of integrated management of childhood illness at East Kalimantan. *Kemas*. 2018;14(2):163-71. Available from:

- <https://www.journal.unnes.ac.id/nju/index.php/kemas/article/view/13707> [Last accessed on 2022 Jan 11].
14. Steinhardt LC, Onikpo F, Kouamé J, Piercefield E, Lama M, Deming MS, *et al.* Predictors of health worker performance after integrated management of childhood illness training in Benin: A cohort study. *BMC Health Serv Res.* 2015;15(1):276. <https://doi.org/10.1186/s12913-015-0910-4>
PMid:26194895
 15. Indonesia Ministry of Health, WHO, UNESCO. Tutor's Guidelines, Distant Training of IMCI Computer Adaptation and Training Tool (ICATT). Jakarta, Indonesia: MOH; 2011.
 16. Titaley C, Jusril H, Ariawan I, Soeharno N, Setiawan T, Weber M. Challenges to the implementation of the integrated management of childhood illness (IMCI) at community health Centres in West Java province, Indonesia. *WHO South-East Asia J Public Health.* 2014;3(2):161-70. <https://doi.org/10.4103/2224-3151.206732>
PMid:28607302
 17. Muhe LM, Iriya N, Bundala F, Azayo M, Bakari MJ, Hussein A, *et al.* Evaluation of distance learning IMCI training program: The case of Tanzania. *BMC Health Serv Res.* 2018;18(1):547. <https://doi.org/10.1186/s12913-018-3336-y>
PMid:30001709
 18. Mupara LU, Lubbe JC. Implementation of the integrated management of childhood illnesses strategy: Challenges and recommendations in Botswana. *Glob Health Action.* 2016;9(1):29417. <https://doi.org/10.3402/gha.v9.29417>
PMid:26899774
 19. Rohayati, Sulastris, Purwati. Factor analytic of implementation integrated management of children illness in health centers. *Nurs J.* 2015;12(1):112-17.
 20. Renosa MD, Dalglish S, Bärnighausen K, McMahon S. Key challenges of health care workers in implementing the Integrated Management of Childhood Illnesses (IMCI) program: A scoping review. *Glob Health Action.* 2020;13(1):1732669. <https://doi.org/10.1080/16549716.2020.1732669>
PMid:32114968