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E-PPGBM: Opportunities, Challenges, And Gaps

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Abstract

Stunting is a chronic nutritional deficiency problem that affects development, cognitive, motor, and verbal abilities, and increases susceptibility to non-communicable diseases. These effects can influence productivity and become a burden on the state. The prevalence of stunting in Indonesia remains relatively high, although Indonesia has succeeded in reducing the prevalence from 37.6% in 2013 to 21.6% in 2022. One strategy for reducing stunting involves accurate community-based recording and reporting through nutrition surveillance, so that information on problems is specific and can serve as a basis for determining appropriately targeted interventions. A good Health Information System is one capable of producing accurate and timely data/information. In practice, however, at the district/city, provincial, and central levels of health management, the e-PPGBM application information system has not played a substantial role because it has not yet produced accurate and timely data/information. This results in incomplete nutritional-status information, leading to inaccuracies in identifying nutritional problems and to inappropriate policy formulation for addressing them. Therefore, it is necessary to examine the opportunities, challenges, and gaps that are important and strategic to the sustainability of the e-PPGBM system. Optimizing the use of e-PPGBM at various stakeholder levels requires active roles and involvement from all relevant parties to ensure that processed data and the information generated can be used to inform appropriate policies for the community.

Keywords: E-PPGBM, Opportunities, Challenges, Gaps

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1. Introduction

Nutrition is a key aspect of human resource development. One nutritional problem that has become a global focus and a target of the Sustainable Development Goals is stunting among children under five. Stunting occurs due to chronic malnutrition, particularly inadequate nutritional intake. Stunting affects development and cognitive, motor, and verbal abilities, and increases vulnerability to non-communicable diseases such as obesity, hypertension, diabetes, and even cancer in adulthood. These consequences can affect productivity, income potential, and skills, while increasing government expenditure on health insurance, causing economic losses, and creating a burden on the national economy. The global prevalence of stunting in 2022 was 22.3%, with 148.1 million children under five affected worldwide. More than half of stunted children worldwide were from Asia (76.6 million), while approximately 42% (63.1 million) were from Africa.

The ASEAN Snapshot Report indicates that Cambodia, the Philippines, Vietnam, and Myanmar experienced declines in stunting prevalence, whereas Malaysia, Thailand, and Indonesia experienced increases. In Malaysia, stunting prevalence rose from 17.7% in 2016 to 21.8% in 2020. Similarly, Thailand's prevalence increased from 10.5% in 2016 to 13.3% in 2020. According to the report, Indonesia's prevalence also showed a slight increase, from 27.5% in 2016 to 27.7% in 2020. The average stunting rate in Southeast Asia was 25.4%. In 2022, Indonesia was estimated to account for 4.7% of all stunting cases worldwide (UNICEF, 2023).

Jambi Province has experienced fluctuating stunting prevalence: 37.2% in 2013, 30.1% in 2018, and 21.03% in 2020, followed by an increase to 22.4% in 2021, 18% in 2022, and 13.5% in 2024. The provincial target for 2024 was 12%, which was below the National Medium-Term Development Plan (RPJMN) target of 14% for 2024. Muaro Jambi Regency was among the regencies that reduced stunting prevalence by 6.6 percentage points between 2023 (18.6%) and 2024 (12%). Meanwhile, Jambi City recorded a consistent decline, from 18.62% in 2020 to 17.4% in 2021, 14% in 2022, and 13.5% in 2024. This downward trend briefly illustrates the success of government programs, as findings from the Basic Health Research (Riskesdas), now renamed the Indonesian Health Survey, have been used by program implementers to develop evidence-based health policy plans, monitor implementation, and evaluate health programs.

One strategy to reduce stunting emphasizes the importance of accurate electronic, community-based recording and reporting through nutrition surveillance, so that the information obtained is appropriate and interventions are accurately targeted (Zulaikha et al., 2021). Reliable data and information accuracy are influenced by the quality of the health information system. In practice, closer examination at the district/city, provincial, and central levels shows that the e-PPGBM information system has not yet contributed sufficiently to producing accurate and timely data and information (Sugianti, 2020). Input indicators refer to the resources used to operate a system. Input evaluation is conducted to ensure that resources are appropriate to the problems being addressed. Inputs can affect processes and consequently influence outputs; therefore, input evaluation is an initial stage that should be carried out before proceeding to subsequent evaluation stages (Solehuddin, 2022).

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Input indicators are known to influence problems in e-PPGBM recording, particularly delays in the reporting process. One contributing factor is the lack of supporting facilities, such as laptops, internet access, and personnel responsible for entering data (Febrianto et al., 2022). Therefore, the input indicators or resources required for the e-PPGBM surveillance system need to be evaluated (Meidiawani et al., 2021).

Having considered this background, it is important to understand the definition, scope, functions, and methods of nutrition surveillance. In fact, many data and information sources can be used for nutrition surveillance. However, the quality of data and information with potential surveillance value still needs attention, as such data are frequently used to describe nutritional conditions and risk factors in the community. Data available and accessible for nutrition surveillance at all levels of government administration include individual and community-level growth-monitoring data for children under five; height measurements of children entering school; anthropometric measurements collected during vitamin A distribution in February and August; and weighing-month data (in several provinces). For risk-factor analysis, routine reports from government institutions (such as health, agriculture, social affairs, and public works agencies) can also be used. Some of these data have already been incorporated into the e-PPGBM format. Despite the many operational studies on nutrition improvement programs, few, if any, have examined the use of the aforementioned data for nutrition surveillance in accordance with the 3A concept (Assessment, Analysis, Action). Several questions remain regarding how these data are used for nutrition surveillance.

A good Health Information System is one that can produce accurate and timely data/information. In reality, however, in health management at the district/city, provincial, and central levels, The e-PPGBM application information system has not played a substantial role because it has not produced accurate and timely data/information. This leads to incomplete nutritional-status information, resulting in inaccurate identification of nutritional problems and inappropriate policy formulation to address them. Therefore, it is necessary to examine the opportunities, challenges, and gaps that constitute important and strategic aspects of the sustainability of the e-PPGBM system.

2. Research Methods

This study employed an explanatory trial using the CIPP Evaluation Model approach, which consists of Context Evaluation, Input Evaluation, Process Evaluation, and Product Evaluation. Service design is a human-centered design approach intended to improve the quality of interaction between a service and its users by considering, comprehensively, the end-to-end processes and resources (people, infrastructure, and protocols) required for the service to operate and generate value.

3. Results And Discussion

a. Results

The Role of District/City/Provincial Governments in Populating the e-PPGBM System Database in Jambi Province. District/City Health Offices primarily undertake monitoring and evaluation, as well as analysis of e-PPGBM data (95.2%). These activities are also part of data-based nutrition program surveillance and are conducted

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periodically to obtain conclusions relevant to the current problems faced in each region.

District/City Health Offices monitor community health centers (Puskesmas) (69.0%) as part of their monitoring activities to ensure that data are entered accurately and within the specified deadlines. In addition, District/City Health Offices analyze data entered into the e-PPGBM system (66.7%), including data on mothers, children under five, and risk factors that affect the nutritional status of children under five.

District/City/Provincial Health Offices use e-PPGBM data primarily in relation to the nutritional status of children under five, to enable early identification of public health problems. Despite the presence of different applications containing similar regional data, e-PPGBM remains a data reference source at the District/City/Provincial Health Office level (80.0%) when compared with other similar data sources. This is based on the argument that data recorded in e-PPGBM are collected routinely and represent individual-level data rather than population samples, and that data trends can be monitored and analyzed every month.

Provision and Management of Resources for Implementing the e-PPGBM System. Community health centers (Puskesmas) are the healthcare service units closest to the community and are also the main implementers of government programs delivered through the District/City Health Offices. Meeting healthcare resource needs at the Puskesmas level remains an outstanding challenge, particularly in accelerating and achieving improvements in community health.

Implementation of the e-PPGBM system is achieved by optimizing the role of nutrition officers in managing e-PPGBM. Their activities include compiling Posyandu data and verifying data entered into the e-PPGBM system (84.1%), managing information and analyzing data (73.2%), and advocating for analytical findings as recommendations for alternative solutions and follow-up actions to address nutritional-status problems among children under five (56.1%). Nutrition officers at Puskesmas are supported by health cadres who have been trained and empowered through workshops and direct assistance during Posyandu activities and anthropometric measurements of children under five.

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through workshops and direct assistance during Posyandu activities and anthropometric measurements of children under five.

Data Collection and Dissemination Practices in the e-PPGBM System. The e-PPGBM system is implemented through a strategy of collecting data in the field, followed by data entry, data analysis and review, and dissemination of the resulting information. Anthropometric data for children under five are obtained through Posyandu visits, which are coordinated and conducted every month. However, manually completed forms require verification to ensure that the data entered are correct and accurate. Data entered into the e-PPGBM system include children's identities (55.4%), anthropometric measurements (94.0%), supplementary feeding (Pemberian Makanan Tambahan/PMT) (48.2%), measurements of pregnant women (19.3%), infant deaths (4.8%), vitamin A consumption (69.9%), and monthly reports based on these indicators.

The entry of anthropometric and child health data into the e-PPGBM application is supported by Posyandu (62.2%), although the data must undergo verification and validation by Puskesmas to minimize data discrepancies. However, some regions do not involve Posyandu in entering data into the application for various reasons, including health cadres' limited proficiency in using the e-PPGBM application (69.3%); the view that health cadres at the Posyandu level need only record anthropometric data for children under five and pregnant women manually (48.0%); and the perception that it is more efficient for Puskesmas staff to perform the data entry themselves (25.3%).

Constraints and Barriers to the Use of e-PPGBM. The e-PPGBM system is implemented as optimally and ideally as possible in accordance with implementation guidelines. However, field conditions reveal several technical problems with the e-PPGBM system. During the previous three months, respondents reported experiencing technical problems with the e-PPGBM application one to two times. Survey findings, supplemented by explanations from nutrition officers, indicate several frequently encountered obstacles when accessing e-PPGBM, including frequent application disruptions/maintenance (65.0%); very limited internet connectivity required to access e-PPGBM in some Puskesmas/Posyandu locations (62.5%); insufficient health human resources responsible for data verification and validation at the Puskesmas level (45.0%); and incomplete data entries from individual Posyandu sites (50.0%).

Various factors that hinder optimization of the e-PPGBM system have an impact on nutrition surveillance activities and indicate changes in children's data within a one-month period. Such data revisions create anomalies in the data analysis system and may indicate technical problems in the field. This hypothesis is supported by nutrition officers' accounts that data are often revised because of data-entry errors or because the verification and validation of measurement data have not been completed. On some occasions, officers have reported that data were not recorded in the e-PPGBM application, requiring them to re-enter the data and consequently spend additional time and effort. These incidents hinder officers in carrying out their duties and result in an accumulation of other work.

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Flow of e-PPGBM Utilization at the Puskesmas and District/City/Provincial Levels. The e-PPGBM application system serves as a surveillance instrument as well as a tool for monitoring and evaluating the nutritional status of children under five in a given area. At the Puskesmas level, e-PPGBM is used to obtain information on children's growth and development (87.8%), provide an accurate picture of individual nutritional status (86.6%), and obtain individual target data for children under five by name and address (78.0%).

Processed e-PPGBM data serve as a basis for considering the formulation of health policies and programs. At the District/City/Provincial level, data utilization proceeds to the analysis and dissemination of information stages, which provide the basis for policy recommendations or alternative solutions to problems concerning the nutritional status of children under five. Achieving good data quality to support high-quality policies requires addressing the root causes of problems in the field, such as the provision of facilities and infrastructure, the availability of health human resources based on workload analysis, and the development of an effective and efficient technical service model for Posyandu that is aligned with e-PPGBM data recording.

4. Conclusions

The implementation of e-PPGBM includes the analysis of data inputs, processes, and outputs, and is expected to have an impact on policy-making related to nutritional problems among children under five in the community. Based on this objective, policy recommendations have been formulated as solutions and alternative approaches to addressing problems related to e-PPGBM, as follows:

Stakeholders: Central-Level Program Managers and District/City/Provincial Health Offices. e-PPGBM data serve as an instrument for monitoring and evaluating the achievement of programs related to child nutrition at the Posyandu, Puskesmas, and District/City/Provincial levels. Feedback activities should be carried out systematically as part of the e-PPGBM database population process. These activities are expected to serve as a means of communication and early prevention of nutritional health problems among children under five, while strengthening the role and position of District/City/Provincial Health Offices in providing guidance and supervision.

Stakeholders: Program Managers/DTO. Develop the features of the e-PPGBM application so that they can accommodate data requirements at the Posyandu, Puskesmas, District/City, Provincial, and national levels, while improving the efficiency and effectiveness of the data-recording process in the e-PPGBM application.

Develop a registration-template recording technique compatible with the e-PPGBM form to accelerate data transfer into the application. This mechanism is expected to convert analog Posyandu records into digital forms that can be incorporated into the data analysis system. Display determinants of risk factors for nutritional-status problems among children under five as alerts for potential health problems.

Stakeholders: Program Managers/DTO. Monitor and evaluate e-PPGBM data quality through data analysis techniques, in alignment with the One Data Indonesia digital transformation agenda. In addition, synchronize metadata to provide the latest information related to nutritional problems among children under five.

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Stakeholders: Program Managers/DTO. Ensure that e-PPGBM interventions and evaluations are recorded and documented systematically in the system on a regular basis.

Stakeholders: Health Offices and Regional Development Planning Agencies (BAPPEDA). Relevant networks should use the results of e-PPGBM data analysis as supporting data and as a basis for planning programs and considering nutritional interventions for children under five.

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