

WITHDRAWN: A multi-level qualitative analysis of sensitive-intervention stunting program: from regulation to action

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EDITORIAL NOTE:

The full text of this preprint has been withdrawn by the authors while they make corrections to the work. Therefore, the authors do not wish this work to be cited as a reference. Questions should be directed to the corresponding author.

Abstract

Objectives : The multisectoral problem of stunting with sensitive interventions is still a public health problem. This problem is due to complex factors that affect stunting programs across sectors to accelerate the stunting program for non-nutrition programs. This study aims to identify challenges in implementing sensitive interventions on stunting from regulation to implementation of activities.

Methods : A qualitative multilevel approach was used for this research by conducting in-depth interviews, observation, and document review on the supply and demand aspects of the stunting-sensitive intervention program. The District of Health as the first level in the regulator, the Public health center as the implementer of the activity, and the community as the target of the activity were interviewed about the impact of regional regulatory innovations on stunting prevalence.

Results This study explains that the families of stunting infants are not familiar with sensitive intervention activities and are still focused on specific packages. Coordination and collaboration, both intern level and between levels, have not been maximally implemented. The development of innovations in regional regulations has no impact on public health indicators both before and after the design is implemented.

Conclusion for practices This research concludes that deploying cadres, transforming regulation innovation to social innovation and program managers training are crucial to accelerate sensitive intervention program.

Significance Statement

Bridging provider and recipient with multisector cadre is needed to raising awareness of intervention-sensitive stunting program recipient. Lack of new initiative on sensitive-intervention stunting program inhibits action accelerating stunting prevalence reduction and provider training plays main role to triggering new innovation and promoting to public health center staff and target recipient. Transforming regulation innovation to social innovation might be alternative action to robust intervention-sensitive stunting program. It could eliminate lack of coordination and collaboration issues with collaborating and elaborating public participant in dialogue process.

Introduction

Indonesia has been working to reduce the prevalence of stunting and other nutritional problems since 2013 by involving multi-sectors in a sensitive intervention package program (D. Pelletier & Pelto, 2013; Torlesse, Cronin, Sebayang, & Nandy, 2016a). The prevalence of stunting under five in Indonesia in 2013 and 2018 based on a national health survey, respectively, is 37,3% and 30,8% (Ministry of Health of Republic of Indonesia, 2013, 2018), indicating the prevalence of stunting still requires maximum effort and support. The high disparity in the prevalence of stunting between regions is also a serious problem in accelerating the reduction in the prevalence of stunting in Indonesia (Beal, Tumilowicz, Sutrisna, Izwardy,

& Neufeld, 2018). Solving the complex stunting problem at the national and regional levels requires multisectoral and comprehensive policies and strategies for improving nutritional status (Beal et al., 2018; Blössner, Onis, & Organization, 2005).

Government regulations at both national and regional levels have been created in Indonesia to synergize programs related to nutrition problems across sectors. The effect of decentralization in Indonesia has empowered regional governments with stunting problems to compile sensitive and specific stunting program regulations (Abdullah & Stoelwinder, 2008). Based on this regulation, the implementation of stunting programs in Indonesia is very varied and needs to be evaluated to accelerate the prevalence of stunting at the national level and regulations and programs implemented at the regional level.

Regional governments have authority over health policies in their regions due to the implementation of the decentralized system in Indonesia (Abdullah & Stoelwinder, 2008). Even so, the central government is preparing a policy framework to serve as guidelines in the regions. The complexity of the stunting problem with the sensitive nutrition intervention package requires a greater contribution than the specific nutrition intervention. Therefore, the sensitive package intervention program requires dynamic inter and intra-sector collaboration to reduce the incidence of stunting by 70% (TNP2K, 2017). The regional government is the regulator for developing sensitive nutrition programs, and the Public Health Center (Puskesmas) is the implementer in providing sensitive nutrition services to the community.

In 2017, the Government of Indonesia mapped 100 national stunting priority area (district/city) by considering the criteria for the number of stunting cases and the poverty ratio (TNP2K, 2017). Each priority area has made innovations in accelerating the reduction in the prevalence of stunting by compiling sensitive intervention nutrition programs that are referred to the national action plan. One of innovation in the area is by making regional regulations as a commitment of regional leaders to respond to stunting program.

Many studies show stunting risk factors that exist in Indonesia. However, the availability of information on reinforcing and inhibiting factors for implementing a multi-sector stunting program is still limited (National Development Planning Agency, 2014). This study aims to address the perspective in each compiler, implementer, and target of sensitive stunting programs. This has an impact on accelerating the reduction in the prevalence of stunting by evaluating the implementation of sensitive nutrition programs.

Methods

Sensitive intervention stunting program

A nutrition intervention is an action that is planned and designed to change risk factors related to nutrition problems such as behavior, environmental conditions or other health problems in individuals, targeted groups, or very large populations (Food and Agriculture Organization of the United Nations [FAO], 2017). An indicator of an effective nutrition intervention is a decrease in the prevalence and impact of malnutrition, stunting, wasting, nutritional deficiencies and infant mortality (de Onis & Branca, 2016; WHO,

2014). Nutritional interventions are grouped into nutrition-specific interventions that focus on improving nutrition during infancy and nutrition-sensitive interventions that focus on factors that affect broad nutritional problems (Olney, Leroy, & Ruel, 2017). A very broad definition of risk requires solving these problems in a comprehensive and multi-sector manner.

The Scaling Up Nutrition (SUN) framework underlines multi-sector involvement as an integration of sectors related to nutrition issues such as the agriculture, education, social and health sectors which are then referred to as sensitive nutrition interventions (Horton, Shekar, & Ajay, 2009; Yamey, 2011). Sensitive nutrition interventions are defined as approaches that prevent risks from nutrition problems with food security, sanitation, clean water, early childhood education, access to food and food, family planning services and affordable health services (Food and Agriculture Organization of the United Nations [FAO], 2017; Leroy et al., 2016).

Indonesia has been working to reduce the prevalence of stunting and other nutritional problems since 2013 by involving multi-sectors in a sensitive intervention package program (Titaley, Ariawan, Hapsari, Muasyaroh, & Dibley, 2019; Torlesse, Cronin, Sebayang, & Nandy, 2016b). Government regulations at both national and regional levels have been passed to synergize programs related to nutrition problems across sectors. The effect of decentralization in Indonesia has empowered regional governments with stunting problems to formulate sensitive and specific stunting program regulations (Abdullah & Stoelwinder, 2008). Based on this regulation, the implementation of stunting programs in Indonesia is very varied and needs to be evaluated to accelerate the reduction in the prevalence of stunting nationally from regional regulations and programs.

Study design

This qualitative study was conducted in North Sumatra Province whereas higher stunting prevalence than national prevalence (Ministry of Health of Republic of Indonesia, 2018) and 4 districts are national priorities in stunting interventions (TNP2K, 2017). This study used a qualitative approach by exploring the multi-level factors in the sensitive nutrition intervention program for implementation research approach (Chaudoir, Dugan, & Barr, 2013). This approach serves as a research concept framework for evaluating the factors that influence the implementation of sensitive stunting programs (Fig 1) which has considered with other related framework (Chaudoir et al., 2013; National Development Planning Agency, 2014; WHO, 2013).

This study modified the multi-level theory to explain the effect of innovation on the implementation of a sensitive intervention stunting program. Furthermore, this framework categorized innovation, targeted levels, provider levels and structural levels into causal factors and then public health nutrition indicators related to sensitive intervention nutrition packages as implementation outcomes.

Participants

Innovation (Regional Regulation)

Since health decentralization was implemented in Indonesia, regional governments have full authority to manage health policies including stunting in their respective regions. Regional governments have the right to formulate and enacted regional policies on stunting to improve the health status and quality of life of the community. Regional government innovation through stunting programs in regional regulations is important as legal basis of program implementation. The Langkat Regency Government passed the regent's regulation No. 10 of 2018 concerning the reduction of stunting, which in the regulation includes the sensitive-intervention stunting program. The regional regulation could be accessed on Langkat Regency official website (Pemerintah Daerah Kabupaten Langkat, 2018)

Targeted/Patient level (Community)

This study used the purposive sampling methods and the participant were enrolled if mothers whose children aged from 0-24 months with diagnosis of stunting, having in same domiciled in national stunting priority villages based on the Ministry of National Development Planning, Republic of Indonesia. A total of 6 mothers were enrolled and randomly selected from the register book which was obtained from integrated health post. We used code "M"

Public Health Center/Provider Level

This study recruited four public health center officers as activity implementers according to conceptual framework. Each participants in this study play significant role on nutrition, environmental health, family health and health promotion implementers of sensitive-intervention stunting program in public health center. The recruited participant has refered to the regional regulation and WHO Framework on Childhood Stunting: Context, Causes and Consequences (WHO, 2013). The framework has covered sensitive-intervention stunting program that mainly implemented by the public health center level/provider participants.

District health office/Structural Level

This study also recruited four informants at the health office as policy and activity formulators that refered on conceptual framework and program implementation of sensitive-intervension stunting program. Interviewed officers at the District health office whose managed nutrition, environmental health, family health, and health promotion. Informants were selected by considering regional regulation and the WHO Framework on Childhood Stunting: Context, Causes and Consequences. The health officer in the nutrition sector acts as the coordinator of the implementation of activities in restoring nutritional status and across sectors within the health office. These officers coordinate with the health office's internal sector and communicate and coordinate with external health. The follow-up criteria for puskesmas officers are directly related to the program and have served in that field within the last two years, and are actively involved in managing, implementing, and evaluating activities directly related to the community.

Implementation outcome

This study uses public health indicators such as exclusive breastfeeding coverage, health services for infants, complete primary immunization, weighing children under five at Integrated service post, community-based total sanitation, stopping open defecation, and active Integrated service post that referred on the WHO Framework on Childhood Stunting: Context, Causes and Consequences. Those indicators are part of the outcome of the available program implementations. These indicator was obtained from District health office and public health center. Furthermore, we compared these indicator in 2017 (before the innovation implemented), 2018 (have signed the innovation), and 2019 (after the innovation implemented).

Data collection

To determine the implementation and adoption of sensitive nutrition intervention programs and describe the complexities of implementing regulation of sensitive nutrition programs from various information sources, this study used a combination of data collection techniques; semi-structured in-depth interviews, and ethnographic observation, and review of documents.

Semi-structured interviews

This study conducted face to face semi-structured in-depth interviews at three groups/levels of informants in Bahasa (Indonesian language) and a interpreter translate the question and answer from regional language and vice versa. The interpreters were female, domicile in study area and fluent in the Java-Malay language (the main regional language on study areas) and Bahasa. Several interviews were conducted in groups such as program managers in the health department. Prior to conducting the interviews, a researcher explained briefly a interpreters in the research objectives, contents and interview procedure. All interviews were conducted at the participants' house, District health office and public health center by a team including the main interviewer (first and third author). In-depth interviews at the mother's level of a stunting infant (level 1) were conducted in the house with a span of 30 minutes to 1 hour and recorded with the informants' permission, then all interviews were audio recorded and transcribed verbatim. No further interviews were considered necessary as data saturation was achieved. Semi-structured in-depth interviews used an interview guide which had been developed by literature and brainstorming among researcher with aiming to explore mothers of stunted infants' experiences and perspectives. Mother's experience and perspective are about sensitive intervention programs that babies and families have received in nutrition services, environmental health, family health, and health promotion before and after regional regulatory innovations.

The interview guide uses open-ended and non-leading questions that allow informants to explain their experiences and perspectives freely. New questions arise based on probing and exploring the questions and generalizing conclusions based on the experiences and perceptions of the mothers of stunting babies. Some questions are modified and developed into Java-Malay Language to make it easier for informants to understand the questions. The interview guide is divided into two parts, namely the first part about the informants' characteristics such as mother's age, mother's occupation, mother's education, age of the baby, sex of the baby, and the number of live births. The second part of the question guide

focuses on sensitive intervention activities for stunting programs with 14 questions. The second part's questions related to health promotion and stunting prevention activities before marriage, pregnancy, and childbirth, family and government support in improving the nutritional status of children under five, environmental health conditions and government programs, and evaluation of the stunting program provided.

The interview guide at the puskesmas (level 2) and the health office (level 3) used open-ended and non-leading questions that allow informants to explain experiences and obstacles to formulating regulations to implement in the community. The interview guide consists of 3 parts where part A contains the informants' characteristics, part B describes the data from the existing program. Part C deals with the preparation (level 3) and implementation of regulations (level 2) starting from the planning stage, the availability of stunting programs in environmental health programs, health promotion, family health, program coordination and synchronization, development and communication of ideas across programs, budgets and human resources and methods of implementing stunting activities before and after the regional regulatory innovation is implemented. At level 3, the questions focus on variables with the scope of preparation of activity regulations, while level two is concerned with implementing activities in the field.

Ethnographic observations

Field observations are carried out by confirming specific nutrition intervention activities that have been carried out and identifying problems that arise in implementing intervention activities. The variables that are part of field observations consist of 3 dimensions, namely the dimensions of residence or work environment (availability of program support, access to sensitive intervention programs), dimensions of daily activities (monitoring of infant nutritional status by health center officers and cadres, roles and responsibilities. answer mothers and families) and interactions (communication patterns between health workers and families). Observation activities show the implementation / specific nutrition intervention program in the form of a physical one at the research location and ongoing activities in developing a sensitive nutrition intervention program such as counseling, Integrated service post activities, and existing cross-sector coordination activities.

Document review

This study examines documents to obtain information that related to sensitive-intervention stunting program. These indicator was obtained from District health office, public health center and official website of regional government in 2017, 2018, and 2019.

Data Analysis

In this study analyze the data manually by using systematical coding data and classifying the data into themes from regulatory formulation, program planning, and sensitive intervention activities based on

groups at each level. Transcripts of interviews, interview notes, and observations were coded in three stages before being analyzed based on themes.

The interviews were transcribed in mix Bahasa and Java-Malay language, and the transcription was translated into Bahasa by an researcher. The focus group discussion has been conducted to ensure the transcription and the meaningful units from the transcript has been selected by the first author according to the study objectives. Furthermore, research member verified selected code in Bahasa to ensure the code reflected the meaning of each unit. Selected quotes were translated to English.

The first stage was carried out by open coding (data reduction). The research team provided a code for each information obtained from the interview transcripts and researchers' notes on informants' vital information. The research team (First and third author) then describes the data in several themes studied both in the process of formulating activities until the implementation of sensitive intervention regulations. After each research team provided a code in the existing transcript, the code was then identified from the variation of the code interpreted by the research team to be developed into a new explanation of the research transcript. This development is carried out on the informants' answers, which are to deepen the informants' experiences and perceptions. Then all existing coding will be interpreted substantively before data analysis.

The second stage in coding in this study is axial code (data display) by looking at the central theme's description and the development done in the first stage of coding. This stage aims to identify and validate the informants' answers who may have conflicted with other informants. All existing code is grouped based on the current level. Some codes can be at more than 1 level, such as planning and implementing health promotion on stunting and promoting nutritional health in general. After there were no new codes and new themes at this stage, the final themes were discussed in the research team to identify errors in coding and themes and potentially misleading or biased assumptions that emerged during data interpretation.

Data Triangulation

Data triangulation was carried out in 2 ways: triangulation of methods and triangulation of sources. Method triangulation uses semi-structured in-depth interviews, ethnographic observation, and document review, while source triangulation is done by extracting and confirming information from multiple stakeholders. Triangulation of data using different sources and techniques can strengthen the credibility and validity of the existing findings to make a positive contribution to reducing the prevalence of stunting in the community. Lastly, triangulation was also done by a document review. A review of documents related to sensitive interventions provides essential information in strengthening the outcomes of the program. The document is an indicator of the effectiveness of existing regional regulatory innovations. This document provides general information about the health profile (health services, environmental health, health promotion, family health, human resources, infrastructure) research sites in the preliminary phase. Existing documents help improve a full understanding of program resources, policies, and context.

The reliability of this study is also strengthened by confirmation and clarification of the facts throughout the research by the research team.

Ethical concern and flexibility

This research has received ethical approval from the Health Research Ethics Committee of the Faculty of Medicine, XXXXXXXX (Ref: # 057/2020). All informants from the mother of the stunting infant's family had given consent to participate in this study before the interview process and explained the research information and research permission that had received approval from the regional government. Stakeholders of the health department and puskesmas gave their consent to participate in research. They are aware of the research findings published in the form of reports, articles, and scientific presentations. The confidentiality of the information provided is guaranteed by providing anonymity on the results.

Result

Innovation of regional regulation on sensitive-intervention stunting program

The Indonesian government issued a national action plan for stunting reduction in 2017 with a priority focus on 100 regions. Mapping of 100 priority areas for stunting based on criteria 1) number of cases and prevalence of under-five stunting from Ministry of Health data in 2013, and 2) percentage and total poor population in 2016 from national economic survey data sources in 2016. The prevalence of stunting is 55.48%, with an estimated total number of children under five with an estimated 54,961 people.

The types of health services in the nutrition sector at the research location started from simple precautions to intensive intervention in sequence, namely the Family Planning Service Post - Integrated Health (Integrated service post), village health posts (poskesdes)/Auxiliary Public health centers (pustu), Public health centers (Puskesmas) and hospitals (9). Integrated service post is a community-based health service unit that carries out early nutrition monitoring, immunization, and health promotion of infants and toddlers in the community (24). The number of active Integrated service post in Langkat Regency is 69.4% of the total 1,308 with the main activities being routine every month (MCH: pregnant women, post-partum mothers, babies, toddlers, family planning, immunization, nutrition, prevention, and control of diarrhea). Poskesdes / pustu / village midwives provide nutritional health services for antenatal visits, delivery with low risk of complications, immunization, and simple medication in each village. Nutrition services in puskesmas are based on comprehensive nutrition services with targets and targets for major nutritional problems.

To respond stunting issue, regional governments formulate regional regulations as a framework for stunting programs. Regent Regulation No.10 of 2018 concerning stunting reduction was passed by the Regent of Langkat Regency by considering stunting cases. As the leading sector, the District health office

elaborates with related sectors to solve multi-dimensional stunting problems with a conceptual framework on sensitive intervention stunting program and specific interventions stunting program.

The innovation of the stunting sensitive-intervention stunting program in this regulation aims to improve individual eating patterns, improve nutrition-conscious behavior, increase access and quality of nutrition services and improvement of nutrition and food awareness systems. Programs that are included in sensitive nutrition intervention activities are access to clean water and sanitation, food fortification, family planning programs, health insurance, health education for parents, early childhood, the community and protection for low income groups.

Target program were unaware of the program components

The characteristics of participants in this study were six mothers from families of children diagnosed with stunting. All participants were women with an age range of 21-40 years old. Participants are domiciled in the stunting priority village for more than ten years. Based on the results of a study of six infant family participants diagnosed with stunting by health workers, they stated that they had heard of and participated in stunting program activities carried out by cadres and puskesmas officers. Six participants had produced homogeneous information. Therefore researcher stopped the recruitment of the participant.

"Just heard about this at third pregnancy. "(M4, 36 years old)

All participants did not aware of all the variables related to the sensitive intervention package, and they tended to focus more on stunting-specific intervention package activities. Participants are more likely to understand that stunting in infants is influenced by the baby's appetite, the type and variety of food, parents' genetic factors, and formula feeding. The participants' exposure to sanitation, water, education, pre-marital guidance, and family planning was not well understood as contributing factors.

"it (house condition) is not adequate in terms of health, still close to the goat pen"(M1, 43 years old)

The stunting activities/programs they receive vary in both methods and schedules. Puskesmas officers and health cadres carry out stunting activities such as community counseling, supplementary food assistance, Integrated service post activities, and monitoring of children's nutritional status under five in national stunting priority villages according to the schedule planned by the puskesmas and Integrated service post cadres. Stunting activities have been expanded in the last two years, especially in certain parts of the region.

"The stunting program in the Integrated service post (including) personal hygiene for baby, there is also giving biscuits and milk for babies who are less (look) nutritious "(M2, 22 years old)"

Stunting program information was more dominant during pregnancy and after delivery in the last two years. This finding can be seen from participants who have three children, confirming no information about stunting before and after childbirth in the first and second pregnancies. Similarly, 3 other participants who had given birth before 2018 are giving the same statements.

"I have never heard (before) of it but currently there was"(M1, 43 years old)

"We can know what is lacking so that this is given (after the cadres map the need in the community) "(M 1, 43 years old)

This research also underlines the monitoring of stunting toddlers during the COVID-19 pandemic. Participants received information that community health post (Integrated service post) was temporarily closed, thus monitoring the development status of children under five were done by cadres directly with home visitor parents need to directly visits the Public Health Centers (Puskesmas). Integrated service post activities that are closed for a certain period of time has impacted Integrated service post activities and related nutrition programs that have not been optimally implemented.

"There are always activities every month, because of this (COVID-19 Pandemic), there are no activities (Integrated service post)" (M 5, 39 years old)

No innovation due to lack capacity to map problem at community level

The function of the Puskesmas as a unit for executing tasks in the health sector includes the leading sector for the stunting program at the sub-district and village levels. In the activities at the Puskesmas, both stunting and stunting-related activities are a derivative program of the policies prepared by the Health Officer and the Ministry of Health. These derivative activities are new activities and modifications to the old activities concerning stunting and activities related to stunting.

"we have environmental health inspection to inspect the drinking water" (PHC1, 45 years old)

Puskesmas act as the leader in stunting and related stunting activities. They also collaborate with related stakeholders including the army and police, Integrated service post cadres and family planning extension agents (for health education and contraceptive use in the community), sub-districts and village officials on community empowerment and environmental health after regulation excluded area.

"When there is an activity, the cadre come to home-visit, sometimes there are also police" (M5, 39 years old)

The health profile also shows that the number of nutritionists at the puskesmas stays as one trained personel. The nutritionist received training from the regional government. Nutritionists play a role as coordinator in implementing stunting programs in the community, including counseling and outreach in the community. Although puskesmas health promotion personnel has a main task to conduct community education activities, in reality, nutrition workers are the one whocarry out health promotion programs. The source of funding for stunting comes from the special fund named health operational assistance (Bantuan Operasional Khusus/BOK). The fund was designed for the health centers and the health office, so that budgeting for activities still refers to directions and monitoringfrom the Health Office. Eventhough the number of activities were increased, there was no additional funding granted for stunting activities at the Puskesmas. This perceived by the respondents as a static state.

Lack of coordination at DHO level to synergize program

Characteristics of participants in this study were program leaders and implementors of nutrition, environmental health, family health, and health promotion at the Health Office. The number of participants involved in this study was 4 people with an age range of 39-42 years, and all participants were female. Based on the field findings, it is known that several aspects become the supporting variables in implementing regional regulations, namely budget, support for regional and central regulations, and multi-sector support. Stunting program budgets from both the central and regional levels are a strengthening factor in implementing stunting regulations in the regions. The source of health operational assistance funds for stunting and the district-city financial budget is one way to implement regional regulations.

"750 million for 2018 and 2019 from the stunting funds, and could be allocated from regional budgets and other budget" (DOH1, 39 years old)

"We have no specific budget for stunting". (DOH2, 41 years).

"Eventough BOK funds does not full supported for stunting, but other program is still related with stunting program (stunting reduction)". (PHC2, 36 years old).

Both supporting from regional and national governments is quite essential, it is also in line with community demand for implementing the stunting program. The stunting program in the districts has become the center of regional and central attention for optimal completion. Multi-sectoral support, both routine and non-routine, is carried out at various related agencies. Stunting program activities at the Health Office have increased the number/frequency of activities after regional regulations exist compared to the new types of existing programs. The implementation of stunting and its related programs tends to have no significant alternation.

"mothers receive the supplemental feeding of pregnant women and (pregnant women) have Iron tablets. Then there are also (program for) for toddlers (vit A) (DOH1, 39 years old)

"We promote personal hygiene and healthy lifestyle. Supports the stunting nutrition of those families" (DOH2, 41 years old)

There are some activities that are more often carried out after the existence of regional regulations. They are drinking water monitoring, environmental hygiene, house sanitation, latrine, distribution of leaflets, and health promotion media about the contents of my plate carried out in 2019 as well as PHBS counseling. Midwives and cadres collect data on toddlers from the community to record children's nutritional status under five.

"there was also stopping defecation outside the latrines, washing hands with soaps, and also monitoring of drinking water from 2017" (DOH3, 40 years old)

Because there are transfers and promotions within the Langkat District Health Office, some program managers are new to this field. The Health Office's role as the formulator of regional health and stunting policies has not been maximally implemented because the coordination and synchronization between programs and between fields are not optimal. The regent's regulations have not optimally coordinated the health sector in compiling an integrated health program between fields so that the acceleration of stunting reduction is not optimal. This can be seen from the public health indicators in 2017, 2018, and 2019 which show that there has been no improvement in public health status on indicators that intersect with the nutritional status of children under five.

"we (all program) focus on stunting but environment is quite large effect such as diarrhea, the environment is not clean, the drinking water is not good supported " (DOH3, 40 years old)

The desire for good collaboration between fields is a factor that can be considered to accelerate implementation. However, the commitment to implementation in terms of policies and synchronization of activities is still not maximally implemented. Basically, each field tries to collaborate with the main tasks and functions of each field.

"when we conduct the program in the community, we run the project together (health promotor, environmental health manager, and nutritionist)" (DOH2, 41 years).

"we (health promotor, environmental health manager, and nutritionist) are still collaboration with or without regional regulation" (PHC1, 45 years).

In this study, it is known that the inhibiting factors in implementing regional regulations are cross-sector collaborations, internal nutritional program emerges such as systems, program communication, program synchronization, socialization, and transfer/promotion. Lack of cross-sector coordination causes program synchronization and communication not to be maximized. This weak coordination causes each sector to carry out its respective primary duties and functions and not on the same vision and mission of implementing regional regulations. Activities are arranged partially and are not related to other activities, so that activity budgeting becomes inefficient.

"We are also conducting monthly meetings with all district health officer and head of district of health for program coordination, in 2017 we have held meetings every Monday" (DHO1, 40 years old). "all sector (environmental health, health care, family health) have a similar target with different program in each sector"(DHO2, 41 years old).

Another finding, an inhibiting factor in implementing regional regulations, is the transfer and promotion of personals. New program managers have not fully mastered the program's problems and activities, so that the continuity and variety of programs tend to follow the programs that have been running.

Nutritional public health indicators (Implementation outcomes)

This study evaluates the impact of regulations based on general indicators available in the health profile of Langkat district in 2017 (before regional regulations), 2018 (when regional regulations are implemented), and 2019 (regional regulations are implemented). The limitations of tracking specific achievements in the stunting program and related to stunting are the limited data available at the Langkat District Health Office and puskesmas. This is because the data is not recorded in the program report, and program managers are still newly transferred to the related fields.

Based on the results of this study, it is known that there is no increase in indicators for sensitive nutrition package activities after the issuance of regional regulations (Figure 2). Although this indicator does not directly describe the incidence of stunting, this indicator reflects other sectoral activities that do not show positive results. Community empowerment through community-based health efforts (Integrated service post), environmental health activities (Community-Based Total Sanitation and stop open defecation), weighing and giving vitamin A to infants and toddlers, immunization, exclusive breastfeeding, and health services for infants did not show a significant result on stunting. Further research is needed to determine the significant effect of indicators on stunting.

The vitamin A program, immunization, weighing children under five showed a significant increase in 2018 and 2019. However, certain programs such as exclusive breastfeeding and environmental health programs such as STBM and stopping open defecation have not shown positive results. Based on the health profile of Secanggang District, environmental health activities have not been implemented in priority stunting and non-stunting priority villages.

Discussion

The multi-level implementation and evaluation of health programs have a complex approach. Developing an appropriate framework that develop policies and strategies that are technically, administratively, and politically would accelerate the innovation of regional regulation (D. Pelletier & Pelto, 2013). The regulation and implementation of health activities are not based on the demand-supply aspect, so that the strategy becomes ineffective (te Lintelo & Lakshman, 2015).

The results of this study highlight the fact that program recipients are unaware of the components of the stunting program's sensitive intervention program. Public health center and DOH have been carrying out sensitive intervention programs, but the public is unaware of what parts of the initiative have been carried out. It can be inferred from these results that there is a mismatch between practices and goals, or supply and demand. Restricted awareness of the elements of stunting intervention programs, as well as maternal and caregiver perceptions of stunting, are several factors that contribute to the gap between supply and demand in the community for stunting programs (Mosha et al., 2018). Malnutrition is not a serious problem in the community, according to a study conducted in rural Guatemala, since the majority of children in the area are short-bodied, so malnourished babies are deemed reasonable by mothers, caregivers, and community leaders, despite the high prevalence of stunting (Brown et al., 2016). People

who do not receive a thorough education on multi-factor stunting cases are more likely to concentrate on the context of improving nutrition, such as supplemental feeding and searching for unlicensed traditional healers and traditional birth attendants (Mosha et al., 2018).

In term of supply aspect, providers' community engagement is extremely limited, resulting in a lack of capacity to map priority setting. Lack of capacity in priority setting is caused by decision-makers' inability to use information found by them, such as crisis-oriented management, time constraints, and a lack of skills (Mitton & Patten, 2004). In addition, a study elsewhere found that a program cannot be sustainable due to stronger social (D. L. Pelletier, Menon, Ngo, Frongillo, & Frongillo, 2011) and political (Balarajan & Reich, 2016) pressures from the supply aspect compared to the demand aspect, so that the health program does not answer directly to problems in society (Subramanian, Mejía-Guevara, & Krishna, 2016). This may occur as a result of the capacity trap, which is the introduction of national initiatives in various regions without being able to identify the issue and the discrepancy between expectations and the government's actual capacity to execute them.

To be able to match between supply and demand, community/social workers involvement can be an alternative solution. Research in India shows that with community engagement such as cadres it is possible to help in mapping delivery and nutritional problems in limited resource areas. Study in Malawi and Bangladesh reported that multi-sector cadres may provide essential elements such as high-quality facilitators for implementing and sustaining health services, high intervention coverage, timely intervention implementation, and supply-side interventions (Colbourn et al., 2013; Fottrell et al., 2013). Women in villages in India who engage and participate in group programs are more likely to use health facilities for maternal and delivery care, are better educated, and are better at addressing local challenges in the implementation of crucial nutrition interventions, according to research (HUNGaMa, 2011; Sethi et al., 2017).

This study highlighted that no innovation at public health level because of lack capacity to map problem at community level. Regional regulation innovations in stunting sensitive interventions still need improvement, especially in reforming innovation strategies through existing regulations. Regional regulation has not yet maximally provided opportunities for developing new activities in stunting sensitive interventions due to dependence on existing program activities and organizational limitations. According to research conducted in Indonesian rural areas, the pattern of implementation of regulations and health programs after decentralization has an effect on health resource distribution, with programs tending to operate in the same way as the previous year, limited initiative, and risk avoidance (Abdullah & Stoelwinder, 2008). This study highlighted that regional regulatory innovations had no significant impact on existing program without sufficient enforcement and improved capacity of implementation. Innovations from sensitive intervention activities have not been maximally applied during pregnancy, childbirth, and infant development. The problem is above that health managers do not understand the knowledge and awareness of developed regulatory innovations in their respective fields.

Individual factors and health systems, according to research conducted in South Africa, affect the introduction of health technologies at the manager level, such as an insufficient funding, inadequate personnel expertise, and interpersonal intricate and hierarchical relationships. (Brooke-Sumner, Petersen-Williams, Kruger, Mahomed, & Myers, 2019). The findings of this study are close to those of a study conducted in South Africa, which found that poor communication and a lack of understanding when implementing new technologies cause frontline workers to perceive an increase in workload, leading to resistance to change and a lack of common vision (Brooke-Sumner et al., 2019; Gilson, Elloker, Olckers, & Lehmann, 2014). Managers aim to organize and promote these technologies to frontline employees so that they can serve as role models toward others (Aarons, Ehrhart, Farahnak, & Sklar, 2014; Gilson et al., 2014). In addition to individual approaches, creating an organizational climate that encourages creativity is critical to creating a positive working environment (Aarons et al., 2014; Brooke-Sumner et al., 2019; Gilson et al., 2014; Okello & Gilson, 2015).

Integration of innovation into the health system is critical to ensure sustainability and systemic impact, especially in multilateral organizations and governments (Clifford & Zaman, 2016), as well as stunting sensitive cross-sector interventions. Efficient collaborations, effective interaction with and endorsement by governments and societies, legislation, confidence, and sometimes willingness are key factors in enhancing system integration, replication, and dissemination of the models, according to a study of three countries on social innovation (Niekerk et al., 2017). To bridge the health-care delivery gap, multilateral organizations and governments are increasingly promoting and funding the invention, testing, and deployment of social technologies (Halpaap, Peeling, & Bonnici, 2019). They play a crucial role in fostering a supportive environment. This makes continuous social innovation as a philosophy in health care delivery, disseminating social innovation approaches and lessons learned, cultivating collaborations and maximizing capital, convening populations, health system players, and diverse stakeholders to collaborate across disciplines and sectors, and nurturing ability in countries (Brooke-Sumner et al., 2019; Clifford & Zaman, 2016; Halpaap et al., 2019).

This research underlines the limited budget and lack of coordination at DHO level to synergize program. This study in line with Indonesia study that discrepancies and a scarcity of budgets for several projects or budget item categories can demotivate employees and jeopardize program sustainability (Abdullah & Stoelwinder, 2008). Similar report also highlighted strategic planning was prepared in a number of districts solely to comply with government regulations, not for the purpose of local planning and resource allocation, resulting in budget allocation being decided by the DHO itself. This ensures that health policymakers should pay careful attention to how DHOs allocate horizontal expenditures. Decentralized health systems cannot offer much change in health system efficiency unless these trends are corrected (Abdullah & Stoelwinder, 2008). A study in Guinea found that inadequate funding, limited numbers of documentation, and insufficient time allocation for the dialogue, which were identified as key obstacles of the policy dialogue mechanism, are bound to affect the dialogue's progress (Ade et al., 2016). These aspects, according to Boyko et al., are necessary for a successful policy dialogue process and should be properly prepared for in any policy dialogue coordination (Boyko, Lavis, Abelson, Dobbins, & Carter, 2012).

We found that regulations and programs do not solve the root of the problem caused by the formulation of a structural strategy. Achieving success with interventions designed to reduce stunting in Low Middle Income Countries requires a combination of factors and components that provide a suitable context. Nutrition education and counseling, immunization, water and sanitation hygiene programs were the components most frequently included in the intervention packages. Our study highlight similar findings where coordination and collaborations are lacking due to political commitment, multi-sectoral collaboration between government, non-government, national, and international organizations exist and community service delivery platforms with active community engagement (Aguilera Vasquez & Daher, 2019). Existing stunting programs only focus on improving infants' nutritional status and then tend not to address the root causes of sensitive interventions. In addition, policies and gradual implementation of immunization, sanitation, and personal hygiene programs are still the roots of the problem in reducing undernutrition in infants. Weak coordination and collaboration between units are caused by sectoral issues that predominantly affect fields (Palutturi, Syam, Asnawi, & Hamzah, 2020). A study in Bolivia conclude that the shift of the single-factor stunting concept to an integrated multifactorial approach by re-formulating existing regulatory innovations with all parties' active involvement can accelerate stunting reduction (Hoey & Pelletier, 2011). The collaboration of cross-sector activities in sensitive intervention programs is still limited to activities in each sector in health services (Hoey & Pelletier, 2011). An other possible factor regarding to lack of coordination and coloboration across all sectors might be different roles and mandates from planning to implementation level. Strong capacity and commitment among DOH and PHC is needed to build a leadership partnership with other sectors and improve collaboration to clarify roles and responsibilities of different departments (Marais & Petersen, 2015).

Bokyo et al. discovered that without coordination and consensus among government and aid stakeholders across the country on the types and standards of interventions, the opposite can happen, and social stability can be harmed by fueling tensions among the various beneficiary communities (Boyko et al., 2012). As a result, it is critical to assign work with a thorough understanding of other aid actors, including their methods and quality expectations, as well as to advocate for better cooperation with other stakeholders (Erismann et al., 2019). The stakeholders on the organization that guided or organized the policy dialogue process lacked a common understanding. This can be seen as a limitation in the communication process, as transparency is a key feature of the policy dialogue process (Ade et al., 2016). In this situation, transparency, timeliness, availability of adequate resources and equipping participants mean that participants are aware of who is leading and initiating the discussion. This is especially important because it will help participants trust the conversation process and its main target (Ade et al., 2016; Boyko et al., 2012).

As limitation, this study did not include policy-makers perspective on this innovation and also other institutional perspective related to regional regulation on stunting program. The role of politics and ideology is the basic problem of malnutrition, even though the root cause is multilateral institutional cooperation. The study in United State found that the strong commitment of policymakers in determining regulatory strategies dramatically influences the performance of nutrition programs, impacting reducing malnutrition (Russo et al., 2020). Support and commitment from all parties and utilization of potential

resources play a significant role in accelerating the reduction of stunting (Baker et al., 2018). Although this study has limited data in measuring political phenomena, conflict, and structural change in government, this study has an important role to map out the implementing sensitive intervention programs and the influence of each level starting from the formulation of activities to implement in the community.

Declarations

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We (the authors) declare that there is no competing interest in this study.

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Figures

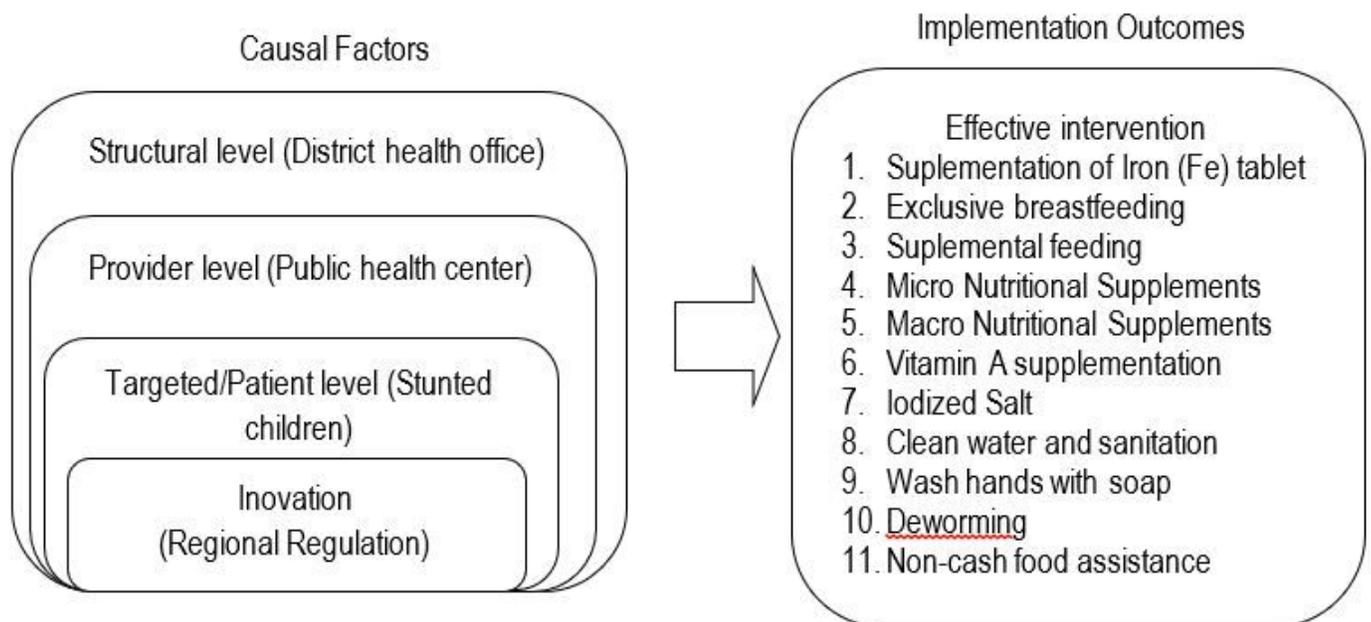


Figure 1

Multi-level framework of sensitive-intervention stunting program and implementation outcomes.

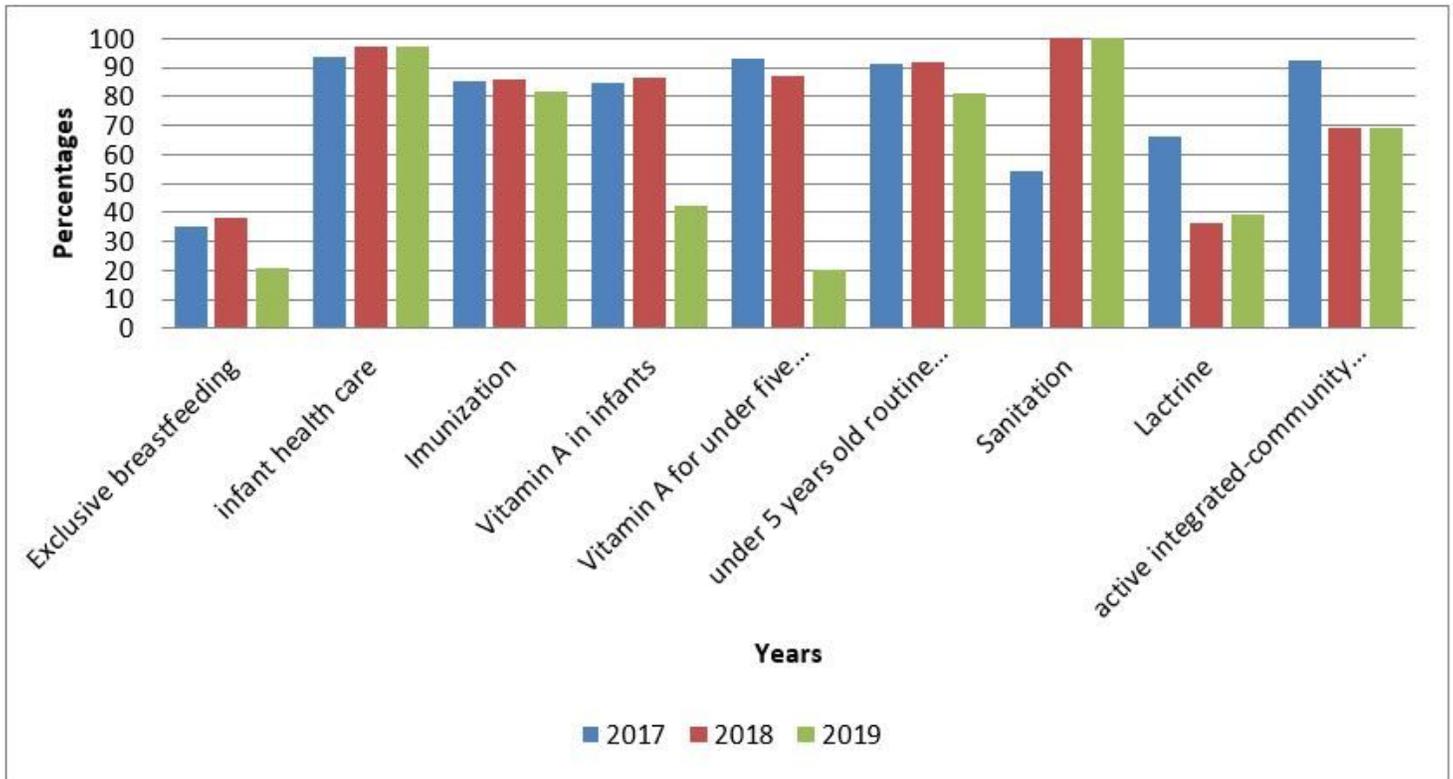


Figure 2

Indicators of public health status related to stunting in Langkat Regency before and after regional regulations. The blue bar shows the public health status in 2017, which means that 1 year before the regional regulation was passed. The red bar indicates the public's health status in 2018 (regional regulation was passed), and the green bar is a year after the regional regulation was enacted (2019).

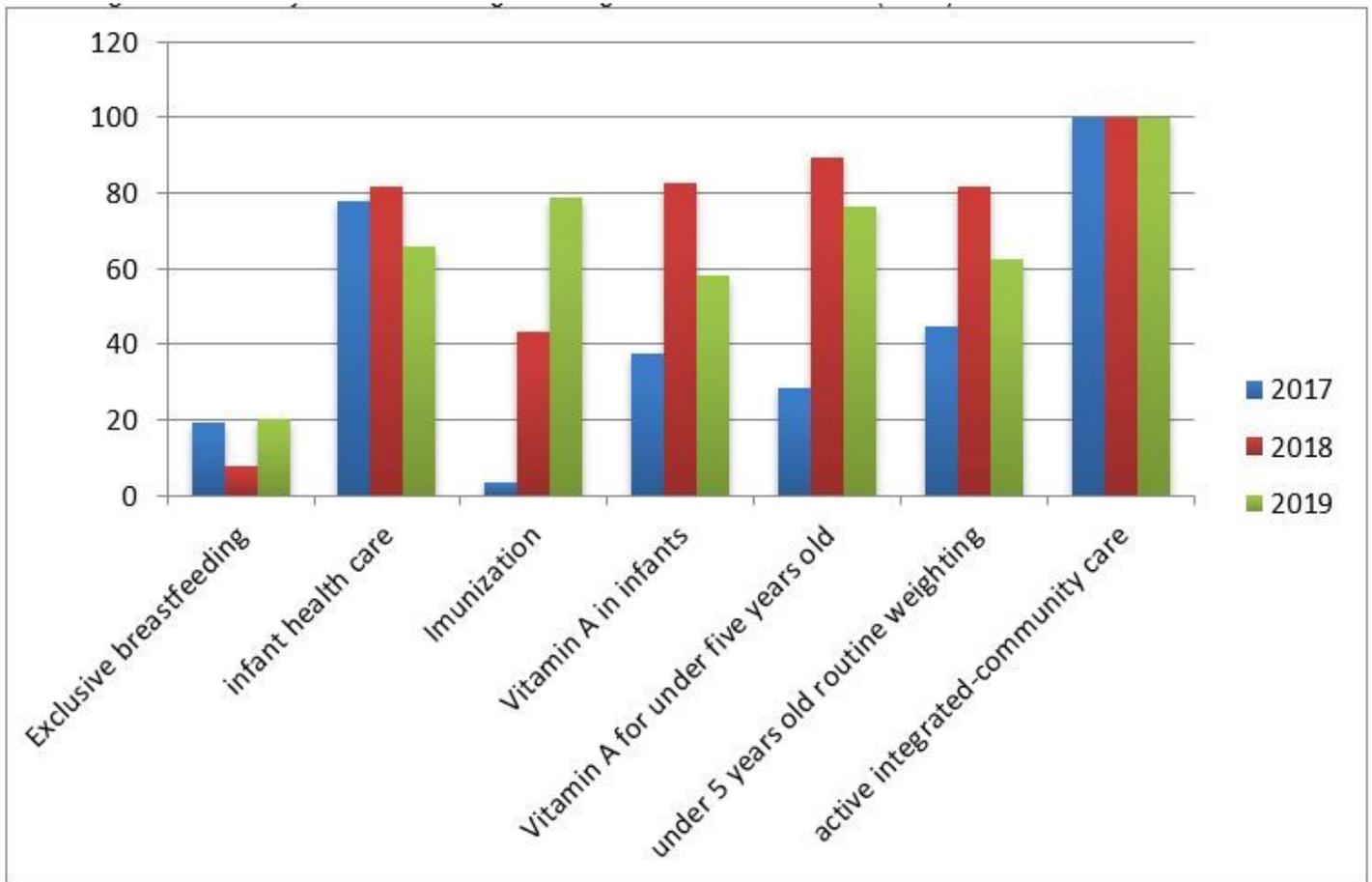


Figure 3

Indicators of public health status related to stunting in Secanggang District before and after regional regulations. The blue bar shows the public health status in 2017, which means that 1 year before the regional regulation was passed. The red bar indicates the public's health status in 2018 (regional regulation was passed), and the green bar is a year after the regional regulation was enacted (2019).