

DESIGNING A FAMILY-BASED INTERVENTION TO IMPROVE CHILD DEVELOPMENT IN WONOSOBO REGENCY

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Abstract. Child development is still becoming a problem. Globally, more than 200 million children aged five fail to reach their full potential growth and development. Stunting is one of the factors that affect child development. The Government of Indonesia has various programs to overcome stunting problems. However, family involvement has not been found much in the stunting prevention process. Therefore, developing an intervention involving family participation is important to improve child development. This study aimed to describe the designing process of family-based intervention to improve the children's development in the stunting locus. This is a qualitative research conducted in Kaliwiro, Wonosobo, in 2019. Informants were selected by purposive sampling, namely informants who represent the stakeholders, the community, and the family. The data were analyzed using thematic analysis. The intervention design followed the six steps in quality intervention development (6SQuID) that help to structure "*Kader Pendamping Keluarga Kawal Baduta*" intervention. The initial stage was mapping out all of the programs related to child development and understanding the problems. The results indicate the potential to increase family participation in child development. Community health workers were identified as an agent of change for capacity development in family-based intervention to optimize children's development using existing programs, with mothers as an intervention target.

Keywords: stunting, family-based intervention, child development

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INTRODUCTION

Child development is still becoming a problem. Globally, more than 200 million children aged five fail to reach their full potential for growth and development due to poverty, poor health and nutrition, and lack of stimulation (Engle *et al*, 2009). A total of 279 million children in low- and middle-income countries (LMICs) are at risk of not reaching their developmental potential, and an estimated 249.4 million (43% of children) do not reach their development potential due to stunting or extreme poverty (Lu *et al*, 2016). Stunting is one of the immediate factors that causes children's growth and development to be potentially unattainable (Engle *et al*, 2009).

Stunting is a major health problem in children under five years old worldwide, especially in low and middle-income countries (UNICEF, 2014). United Nations International Children's Emergency Fund, World Health Organization and The World Bank (UNICEF/WHO/World Bank) estimated the number of stunted children worldwide is 151 million or 22.2% of the children in the world, with a higher proportion in low-income (16%) and lower- and middle-income countries (47%) compared to upper-middle-income (27%) and high-income (10%) countries (UNICEF/WHO/World Bank, 2021). Global numbers show that 171 to 314 million children are stunted, and most of them live in Africa and Asia (UNICEF/WHO/World Bank, 2021).

Indonesia ranks fifth in its position as the country with the highest stunting rate and is ranked as the third country with the highest prevalence of stunting in the South-East Asia Region (Data and Information Center - Ministry of Health, 2018). The prevalence of stunting in Indonesia has declined from 30.8% in 2018 to 27.7% in 2019 (Central Bureau of Statistics, 2019). Although the prevalence is decreasing, a lot still needs to be done to meet the target of <14% by 2024 (Republic of Indonesia, 2020). In Central Java, the prevalence of stunting was 27.68%, with the highest in Wonosobo Regency (38.57%), an increase of 7.08% from 2018 (Central Bureau of Statistics, 2019).

One of the causes of stunting is poor parenting practices, which impact health in the form of failure to thrive (low birth weight, small, short, thin), experiencing cognitive and motor development barriers, and

metabolic disorders in adulthood (Kakietek *et al*, 2017). In the long term, stunting has an impact on increasing morbidity and mortality, decreased child development and learning capacity, and increased risk of infection and non-communicable diseases as children grow up (Akombi *et al*, 2017). Stunted children may never reach their full potential development. Stunting children have a significantly lower verbal and total intelligence quotient (IQ) (Koshy *et al*, 2022). Early-onset persistent stunting was associated with lower cognitive development in children at five years of age in this cohort of children (Alam *et al*, 2020).

Reducing stunting is the first goal of the global nutrition target for 2025. WHO and the UN target a reduction in stunting rates of 40% by 2025 (UN, 2015; WHO, 2014). Efforts made in the non-health sector (program to reduce poverty, maternal education, and agricultural programs) have an impact on 36-70% of stunting reduction. Meanwhile, efforts made in the health sector (maternal and newborn health care, access to family planning/reduction in fertility, and maternal nutritional status) contributed to the decline by 20-64% (Roediger *et al*, 2020). The handling of stunting in Indonesia is carried out through specific nutrition intervention policies and sensitive nutrition interventions involving multi sectors.

However, several obstacles are still faced in implementing the acceleration of stunting reduction, including the ineffectiveness of the stunting prevention and control program that has been carried out, and there are still many people, especially the mother group, who do not have an understanding of stunting (Saputri and Tumangger, 2019). The family is one of the keys to the success of the stunting prevention program. A family factor is one of the critical factors affecting the child's health and nutrition status. Therefore, family-based interventions still need to be done. The intervention that is considered the most effective for overcoming the problems of growth and development in children under five years old is to conduct comprehensive programs that are integrated with health and nutrition services for younger and disadvantaged children and families, one of which is through parenting and parent-child programs (Engle *et al*, 2007). Therefore, this study aimed to describe the designing process of family-based intervention to improve the children development in the stunting locus.

MATERIALS AND METHODS

Study design and setting

This is a qualitative research and carried out in February and November of 2019. The study took place in Kaliwiro Subdistrict, Wonosobo Regency, Central Java. Kaliwiro Subdistrict was chosen as the research location because this location has a high number of stunted children with developmental delay. No special intervention has been carried out in this location to overcome stunting and developmental delay in children other than from routine government programs.

Sample selection and sample size

Informants were selected by purposive sampling, namely informants who represent the stakeholders, the community, and the family. Informants from the stakeholders were taken from the district to the village level, which consisted of the malnutrition prevention team from the Health Office, the Family Hope Program team from the Social Service, the toddler family development program from the National Population and Family Planning Agency, Head of public health center, nutrition officer of the public health center, village midwife, and village head. Informants representing the community are community leaders, family welfare organization leaders, and community health workers. The informants representing the family are mothers of children under two years old. The total number of informants interviewed was 15, and the number of informants participating in the focus group discussion (FGD) was 32, divided into four groups.

Data collection

Data was collected through in-depth interviews and FGD. In-depth interviews were conducted with informants who are considered to represent stakeholders and the community. Interviews were conducted by making an appointment at first and were conducted at the informant's workplace. The interview took place once, with the interview length between 60-90

minutes. Data collection using the FGD method was carried out on a group of mothers of children under two years old and community health workers, which consisted of two groups. Each group consisted of eight people. The selection of the mothers to be enrolled for FGD were chosen by community health workers namely mothers of children under two years old who were willing to participate in the FGD. The FGD activity lasted for 60 minutes and were conducted in the community house. Interviews and FGD activities were carried out using in-depth interview and FGD guidelines and recorded using a tape recorder. The researcher previously obtained written informed consent from informants.

Data analysis

The qualitative data were analyzed using thematic analysis. The intervention design was followed according to the six steps in quality intervention development (6SQuID). The 6SQuID structure (Wight *et al*, 2016) performed were: (1) define and understand the problem and its causes; (2) identify factors with the greatest scope for change; (3) identify how to bring about change; (4) identify how to deliver the change; (5) test and refine on a small scale; (6) collect sufficient evidence of effectiveness to justify rigorous evaluation/implementation. In this paper, the step six was not completed because the scope of the research did not include evaluation of the intervention development process.

Ethical approval

Ethical approval was obtained from the Ethics Commission of the Health Research and Development Agency, Ministry of Health under number LB.02.01/2/KE.045/2019.

RESULTS

The intervention strategy was named "*Kader Pendamping Keluarga Kawal Baduta*" (Community Health Workers Assistance to Family with Children Under

Two Years Old) to assist mothers in maintaining the optimal development of their children in the first two years of life. Several stages using the 6 SQuID framework in the designing of family-based intervention to improve children's development that has been carried out include the following:

Step 1: Defining and understanding the problem and its causes

a. Identify programs aimed at children under two years old

The first step was to identify the implementation of the program aimed at children under two years old. Some of the programs that have been running include integrated healthcare center; mother's class child health; integrated management of childhood illness; stimulation, detection, and early intervention of child growth and development; children under-five family development program; early childhood education; Indonesian health program through family approach; supplementary food provision; nutrition in the first 1000 days of life; programs related stunting prevention; clean and healthy behavior.

b. Mapping problems related to stunting and child development

The results of interviews with stakeholders indicate that the health program for children under two years old has been running. Family planning division socializes the importance of the first 1000 days of life and after that puts a sticker on stunting risk family house (having pregnant woman and or children under two years old). Through this program, the pregnant woman and children under two years old could be monitored intensively by cross-sectors with stunting prevention programs. While doing this program, the officer also provided information about stunting to the family. However, the information had not changed the attitudes and behavior of the family.

Another obstacle was that many toddlers were not being cared by their parents, because they had to live in different cities for work. The child's growth and development were not monitored, because they were not taken to the integrated healthcare center. Toddlers who had completed their basic immunizations also tended to stop coming to the integrated healthcare center. The nutritionist then had to make a home visit after the integrated

healthcare center. In the research location, there were still many children who experienced malnutrition. This was due to numerous economic and non-economic factors, including parenting.

“Perhaps a large number of children can cause a lot of stunting. Because the parents do not have a lot of attention to taking care of their children. As a result, the children lack of nutrition.”
(Informant H)

Several health programs that involved families by empowering mothers had been carried out, such as the children under-five family development program. This program monitored children’s development and taught the parents how to monitor their children’s development independently.

“There are parents who consciously give stimulation according to their children’s age, but there are those who don’t give any stimulation or unconsciously give stimulation exceeding the children’s age. So there are indeed many variations. So the children under-five family development program is an effort to standardize the parents’ knowledge to give stimulation according to the stages of the child.”
(Informant M)

The integrated healthcare center, early childhood education, and children under-five family development program can work together to improve children’s growth and development. During the last three years in Kaliwiro, community health workers had home visits related to parenting and eating patterns in toddlers with growth and development problems. Socialization about stunting prevention had been carried out. However, at the household level, most of the mothers who became FGD participants stated that they had never received information about stunting. A small number of FGD participants get information about stunting from television, community health workers, or neighbors.

Step 2: Identifying which causal or contextual factors are modifiable

From the mapping of the program for children under two years old that has been running, the programs being brought closer to families include: providing knowledge about the growth and development of children under two years old; monitoring children growth by taking regular anthropometric measurements with community health worker (CHW) assistance; provide supplementary food provision and teaching about infant and child feeding practices to mothers; provide knowledge and teach the mothers about the practice of stimulation, detection, and early intervention of child growth and development using a pre-screening questionnaire.

At this stage, the researchers also identified the factors that had the potential for making a change. It was decided to carry out a family-based intervention, with the mother as the target of intervention. Based on the identification of problems carried out in the first stage, several modifiable factors that could be targeted for intervention were: parental knowledge about child growth and development, parenting practices (stimulation, early detection, infant and young child feeding (IYCF), and parental involvement in health programs.

Step 3: Deciding on the mechanisms of change

At this step, the researcher decided on the change mechanisms. The researcher identified modifiable causal factors that allowed changes to be made and identified possible change mechanisms to achieve change goals (Table 1). It was also determined to choose CHW as agents of change to achieve the expected change targets. The CHWs were chosen as agents of change because they already had a close relationship with the mothers who were the intervention targets, so they could take a personal approach to deliver the family-based intervention.

Step 4: Identify how to deliver the change mechanisms

Table 1
Change mechanisms for childhood development intervention

Modifiable factors	Change mechanisms
Maternal knowledge about child development	Raising mother awareness of child development
Parenting practices: stimulation, early detection, IYCF	Teaching about parenting practices to mothers as caregivers
Maternal involvement in health programs	Increase mother's motivation to be involved in health programs and access health services

IYCF: Infant and Young Child Feeding

At this step, a design for how to deliver the intervention was started. We identified how the best way could be to deliver the information and knowledge about the growth and development of children under two years closer to the family. At this stage, it was also necessary to identify the factors that could be succeeded or otherwise the factors that could be a risk from the implementation of the intervention.

This intervention was delivered in two phases in stages. The first phase is carried out by conducting training for CHWs who will become family companions in intervention (Table 2).

The second phase was carried out by assisting mothers by CHWs. Before receiving assistance, mothers of children under the age of two were explained about the intervention that would be carried out (Table 3).

In this second phase (Table 3), the intervention is carried out by CHW who have been previously trained. The CHW assisted the mother with children under two years old, about children's growth and development. Mentoring was done weekly. Each meeting lasts for 45 minutes with as many as 16 home visits. When there was no assistance from CHW, the mother stimulated their children independently and recorded the stimulation activity that has been done in the daily report. This daily report was used by CHW as

Table 2
 Characteristics of “*Kader Pendamping Keluarga Kawal Baduta*” Intervention
 Phase 1

Intervention characteristics	Description
Content	Materials related to the under two years old development: <ul style="list-style-type: none"> • Explanation of “<i>Kader Pendamping Keluarga Kawal Baduta</i>” intervention • The growth and development of children under two years old • IYCF and child feeding practices • Early detection of growth and developmental disorders and child stimulation • Child stimulation practice
Provider	Facilitator from the research team
Format	Training (material and practice)
Setting	Community
Recipient	16 CHW
Intensity	Four times meetings, total 25 lessons (1 lesson = 45 minutes)
Duration	Daily session for four days

CHW: Community Health Worker; IYCF: Infant and Young Child Feeding

a monitoring medium, because the mother would record the activities that have been carried out by the mother for the child in a week. This report also contained the health condition of the children under two years old, whether they were healthy or sick. If the child was sick and required medical treatment, the CHW would refer them to the midwife or public health center.

When providing an assistance, CHW did children monitoring, teaching the parents to do stimulation and early detection of growth and

Table 3
 Characteristics of “*Kader Pendamping Keluarga Kawal Baduta*” Intervention
 Phase 2

Intervention Characteristics	Description
Content	Materials related to the under two years old development: <ul style="list-style-type: none"> • Explanation of “<i>Kader Pendamping Keluarga Kawal Baduta</i>” intervention • The growth and development of children under two years old • IYCF and child feeding practices • Early detection of growth and developmental disorders and child stimulation • Child stimulation practice • Introducing some programs related to the child’s growth and development and stunting prevention
Provider	CHW
Format	Home visit, assist mother in giving stimulation and feeding practice, family support (motivation), observation, parent assignment
Setting	Community
Recipient	Mother of stunting children under two years old with developmental delay
Intensity	16 times home visit
Duration	Once a week (each visit lasts for 45 minutes)

CHW: Community Health Worker; IYCF: Infant and Young Child Feeding

development of children, and teaching about feeding infants and children practices. In each meeting, the CHW motivated mothers to be actively involved in increasing the growth and development of children under two years old, and encouraged mothers to attend integrated healthcare centers. The CHW also observed and recorded the results of observations during visits, and recapped the daily report from the mother.

Step 5: Testing and adapting the intervention

The fifth step was carried out in the first phase, which was the training for community health workers. After the training, a brief evaluation was conducted regarding the participants' acceptance of the training materials, mastery of the materials, and the participants' commitment to intervening in "Kader Pendamping Keluarga Kawal Baduta". At the end of the training session, all participants were committed to providing families assistance by doing home visits until the end of the intervention.

DISCUSSION

Based on the problem mapping carried out in first step, several programs related to child development have been implemented, and some of them involve families. However, family participation in these programs is still low. Based on these problems, this research identified the modifiable factors that may be changed in the intervention. The modifiable factors that become the target of the intervention would focus on parents with an emphasis on three objectives, namely efforts to increase maternal knowledge of child development, parenting practices (stimulation, early detection, IYCF), and parental involvement in health programs. Research shows that the likelihood of stunting in children is more than twice as high if parents have low education (Beal *et al*, 2018). The findings regarding this modifiable factor are in accordance with previous studies. Stimulation is one of the things that will be improved in parenting practice, because the results of the study show that cognitive stimulation carried out in areas of nutritional deficiency has succeeded in improving child development (Latifah *et al*, 2013). Parenting practice and stimulation increased child's growth and development, and nutritional status (Ashar *et al*, 2020). Raising mothers knowledge on IYCF and IYCF practices as a modifiable factor in line with previous research that family-based nutrition education changes mothers knowledge, attitudes, and behavior in preventing stunting in Kupang, Indonesia (Setia *et al*, 2020).

The results of the FGD and interviews also showed that the target of intervention was the mother and the modifier was the community

health worker. The main target of this intervention is mothers of children under two years who are stunted and having developmental delay. At the individual level, one of the interventions that can be done to prevent stunting is to increase knowledge focused on the mother group. Mothers are primary caregivers in most Indonesian households. Household and family factors, as well as community and social factors, are important proximate determinants of child stunting in Indonesia (Beal *et al*, 2018). Mother as the source of parenting and main stimulation, plays a role in children's growth and development especially in Javanese culture as an intervention area (Yunitawati and Latifah, 2020). Therefore, it is important to increase knowledge focus on the mother group (Akombi *et al*, 2017).

The intervention will be delivered by trained community health workers to a mother, by doing weekly home visits. Home-based intervention to build parenting capacity of early childhood development broadly proven links to child cognitive and socio-emotional development (Black *et al*, 2017). A community health worker functioned as an agent who assists mothers to obtain information, learn, and practice independently to improve children's growth and development. CHWs are important part and evidently effective in improving population health, and strengthen linkages between communities and health services (Perry *et al*, 2014).

This study has described the steps in designing process of an intervention aiming to improve children's development in stunting locus. Several studies using the 6 SQuID intervention steps with various targets have been carried out (Masquillier *et al*, 2020; Trollman *et al*, 2021; Wight *et al*, 2022). The 6 SQuID steps have the advantage of developing culturally sensitive interventions and determining people who are involved in the intervention. The 6 SQuID steps in this study can effectively be used to develop interventions that are in accordance with the characteristics and needs of the research area.

The limitation of this research is the absence of the evaluation of this intervention at family level. In the future, it is necessary to conduct a family-based research including paternal parenting role enhancement for the child development. This research explains the stages of providing family-based interventions to improve the development of under two years old children.

Designing intervention using the 6SQuID help to structure “Kader Pendamping Keluarga Kawal Baduta” intervention. Community health workers act as agents who help mothers to obtain information, learn, and practice independently to improve children’s growth and development.

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CONFLICT OF INTEREST DISCLOSURE

The authors declare that they have no competing interests.

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