



A Qualitative Study on Barriers to Stunting Primordial Prevention during the PentaCOME Project

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Abstract

Edited by: Sasho Stoleski
Citation: Wijaya MI, Kartinawati KT, Pradnyawati LG, Bayuningrat IG, Subrata T, Pariartha IM, Indraningrat AAG, Wijaya MD, Sari K. A Qualitative Study on Barriers to Stunting Primordial Prevention during the PentaCOME Project. Open Access Maced J Med Sci. 2023 Feb 05; 11(E):152-161. <https://doi.org/10.3889/oamjms.2023.11289>
Keywords: Stunting; Primordial prevention; ELSIMIL; PentaCOME; Bali
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Received: 20-Nov-2022
Revised: 14-Jan-2023
Accepted: 26-Jan-2023
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Funding: Kemendikbudristek, Universitas Warmadewa, PT. Sido Muncul.
Competing Interests: The authors have declared that no competing interests exist.
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BACKGROUND: The government of Gianyar district in Indonesia has successfully decreased the stunting prevalence from 12.1% in 2018, became 11.1% in 2019, and ended up with 5.1% in 2021, which was less than the stunting prevalence in Bali province (10.9% in 2021) and much lower than the national wide (24.4%). The PentaCOME (Pentahelix Community-Based Medical Education) project, the collaboration of the Warmadewa University, the Indonesian Ministry of Education, Culture, Research, and Higher Education, as well as PT. Sido Muncul, is intended to continuously lower stunting prevalence through "Stunting Primordial Prevention Through Future Brides and Grooms Accompaniment" initiative in Payangan District.

AIM: The present study sought to determine barriers to implementing such initiative.

METHODS: This is a qualitative study. The data were derived from in-depth interviews and focus group discussions (FGDs). The key informants were purposefully selected to represent pentahelix model (i.e., academican, business, community, government, and media). Twenty key informants were interviewed during 1 September 2022–15 October 2022 period: Three key informants were from academican, two from business, nine from community, three from government, and three from media. Two FGDs were conducted and attended by the representatives of academican, community, government, and media. The business representatives failed to attend both FGDs. The data were transcribed and coded independently by two coders. The codes were then categorized into the social ecological model.

RESULTS: At the intrapersonal level, informants described not knowing about ELSIMIL application (ELSIMIL stands for *electronic "Siap Nikah dan Hamil"* in Indonesian, which means electronic "Ready to Marry and Get Pregnant"). At the interpersonal level, we detected social pressure to get pregnant before marriage among Balinese ("no pregnancy, no marriage" motto). At the institutional level, key informants found the Future Brides and Grooms Accompaniment and ELSIMIL application campaign to be insufficient. At the community level, the family support team community has been engaged actively; however, they could not function adequately due to "no pregnancy, no marriage" motto. At the policy level, the traditional village assembly (commonly known as "*Majelis Desa Adat*" in Indonesian), which has not issued regulation regarding the future brides and grooms accompaniment, and lack of cross-sector collaboration were reported as barriers to this initiative.

CONCLUSIONS: A well-developed promotion could improve the knowledge about ELSIMIL application among future brides and grooms. Advocacy to the traditional village assembly might slowly diminish "no pregnancy, no marriage" motto among Balinese hence enhance primordial prevention toward stunting. Cross-sector collaboration (known as pentahelix collaboration) needs to be empowered to achieve the "zero stunting for golden generation" goal accordingly.

Introduction

Stunting among children under 5 years of age remains the most essential challenges to deal with in human growth and development [1], [2], [3], [4]. Stunting is associated with decreased cognitive ability; hence, results in lower school performance, and when they are adult, decreased earnings. An estimated 149.2 million children under 5 years of age are stunted worldwide in 2021, of whom 92% live in Asia and Africa [1], [2], [3], [4].

According to the Indonesia Nutrition Status Study conducted by the ministry of health in 2021,

the stunting prevalence among under-5-year toddlers in Indonesia was 24.4%, which meant that nearly one fourth of all under-5-year toddlers suffer from stunting, despite the continuously reducing stunting prevalence year by year (26.92% in 2020, 30.8% in 2018, and 37.2% in 2014) [5], [6], [7], [8], [9]. The data summarized in the 2021 Indonesian Nutritional Status Study was obtained through data collection in 34 provinces and 514 districts or cities with a total of 14,889 census blocks and 153,228 under-5-year toddlers. There is discrepancy between the Indonesia Nutrition Status Study and the Community-Based Nutrition Recording and Reporting Electronic Application. In Klungkung District in Bali province, for instance, the 2021 Indonesia Nutrition

Status Study reported 2300 toddlers with stunting, while the 2022 Community-Based Nutrition Recording and Reporting Electronic Application merely reported 597 toddlers under 5 years of age with stunting. However, the one which is officially admitted by the government is the data from the Indonesia nutrition status study [5], [7], [9], [10].

The government targets the stunting prevalence to fall below 14% by 2024. For this reason, the target for reducing stunting prevalence annually should be at least 2.7% [10], [11], [12]. To achieve this target, the ministry of health will carry out the specific interventions by addressing the stunting direct causes, such as providing food intake, preventing infectious diseases, and developing the sick toddlers integrated management. Meanwhile, the National Population and Family Planning Agency together with a number of other ministries carry out the sensitive interventions. The sensitive interventions are initiatives related to the stunting indirect causes, which encompass the provision of drinking water and sanitation, nutrition and health services, increasing awareness of child care and nutrition, and increasing access to food. Stunting is a condition where a child has a height below his age standard. Stunting is one indicator of failure to thrive in under-5-year toddlers due to chronic nutritional deficiency during their first 1000 days of life [6], [8], [9], [13].

Poor nutritional status, primarily in pregnant women and children under 2 years of age, is a significant problem in some areas of Indonesia [9], [10], [11], [12], [13]. West Kalimantan Province, for instance, is known to have both a high stunting prevalence in children under 5 years of age as well as chronic energy deficiency in pregnant women. If the stunting prevalence (short according to age) is associated with the wasting prevalence (thin according to height) according to the standards set by the WHO, Bali, whose stunting prevalence is 10.9% and wasting prevalence is 3%, is the only province in good category with a low stunting prevalence ($\leq 20\%$) and low wasting prevalence ($\leq 20\%$). Lampung, Bangka Belitung, the Islands of Riau, DKI Jakarta, and Yogyakarta are provinces with low stunting prevalence and high wasting prevalence (categorized as chronic). Meanwhile, Bengkulu with high stunting prevalence and low wasting prevalence is categorized as acute [5], [6], [8], [13].

Stunting prevalence is expected to decrease 3% in 2022 through well-targeted specific and sensitive convergency program, supported by better and more integrated data of coverage, stunting reduction acceleration team development, and stunting reduction program with a family approach through integrated health service post. The government intends to reduce stunting prevalence to 14% in 2024, a 10.4% decrease in <2.5 years. The National Action Plan for Reducing Indonesia's Stunting Prevalence was developed in 2022

as the guidance to further fasten stunting reduction on the district level [7], [14].

The stunting reduction acceleration program is primarily emphasized on the provinces whose stunting prevalence are high through more intensive interventions and more consolidated as well as integrated funding which result in more effective and efficient initiatives. Such provinces include East Nusa Tenggara, West Nusa Tenggara, Aceh, West Kalimantan, South Kalimantan, Central Sulawesi, and West Nusa Tenggara. Other provinces whose stunting absolute numbers are high, which include West Java, East Java, Central Java, Banten, and South Sumatera, should also be considered. If the stunting prevalence (short according to age) is associated with the wasting prevalence (thin according to height) according to the standards set by the WHO, Bali, whose stunting prevalence is 10.9% and wasting prevalence is 3%, is the only province in good category with a low stunting prevalence ($\leq 20\%$) and low wasting prevalence ($\leq 20\%$). Lampung, Bangka Belitung, the Islands of Riau, DKI Jakarta, and Yogyakarta are provinces with low stunting prevalence and high wasting prevalence (categorized as chronic). Meanwhile, Bengkulu with high stunting prevalence and low wasting prevalence is categorized as acute [7], [8], [11], [14].

Bali is the province with the lowest stunting prevalence in Indonesia, which is 10.9% based on the 2021 Indonesia Nutrition Status Study. Nevertheless, Bali targets the stunting prevalence falls to 6% in 2024. It requires cross-sectoral collaboration and strengthening of the district-based family support teams. Improper parenting, malnutrition, poverty, and inadequate sanitation are the main factors for children to grow stunted. Therefore, it is necessary to continuously socialize and educate the community, especially teenagers, to avoid the risk of giving birth to stunting children in the future. Stunting prevention needs to be done from the upstream, starting from teenagers. Therefore, the stunting primordial prevention through future brides and grooms accompaniment is very essential. It should be initiated 3 months prior to marriage. This study is intended to explore the barriers to the stunting primordial prevention through future brides and grooms accompaniment using ELSIMIL application (ELSIMIL stands for *electronic siap nikah dan hamil* in Indonesian, which means electronic application of ready to marry and get pregnant).

Methods

Study setting

The research was conducted in Payangan District. Payangan is one of the districts located in

Gianyar regency, Bali province. Payangan District consists of nine villages with an area of 75.88 km². To the north, it is bordered by Banua Village, Kintamani District, Bangli Regency; to the south, it is bordered by Kedewatan Village, Ubud District, Gianyar Regency; in the east, it is bordered by Sebatu Village, Tegallalang District, Gianyar Regency; and in the west, it is bordered by Pangsan Village, Petang District, Badung Regency.

The highest number of hamlets was found in Bukian Village (11 hamlets), while the least number of hamlets was found in Bresela Village (three hamlets). The number of families in Payangan District in November 2020 was 10,418 families with a population of 46,621 people. The highest population was found in Bukian Village with a population of 7673 people. The number of male population is 23,272 people and female population is 23,349 people. The overall ratio of male and female population is 99. The total number of members per family is five people and the highest population density is in the village of Melinggih.

Sampling strategy

Purposive sampling was used to select key informants for interviews and participants for two focus group discussions (FGDs). Key informants were representatives of pentahelix model (i.e., academician, business, community, government, and media). Academicians were represented by the Warmadewa University lecturers who have supervised community-oriented medical education (commonly abbreviated as COME) in Payangan District, business by two PT. Sido Muncul's employees, community by the family support team members, government by Payangan Community Health Centre staff, and media by Bali Post, TVRI Bali, and Radio Thomson News FM 93.3 MHz staff. To ensure that key informants represented Payangan District community, they were selected from all nine villages in Payangan District. All of them got training in utilizing ELSIMIL to accompany the future brides and grooms. Table 1 shows key informants characteristics.

Table 1: Informant characteristics

No	Initial	Gender	Age (years)	Pentahelix
1	I1	Female	32	Academician
2	I2	Female	30	Academician
3	I3	Male	77	Academician
4	I4	Male	54	Business
5	I5	Male	60	Business
6	I6	Female	29	Community (Melinggih Kelod Village)
7	I7	Female	29	Community (Melinggih Village)
8	I8	Female	27	Community (Kelusa Village)
9	I9	Female	28	Community (Bresela Village)
10	I10	Female	31	Community (Bukian Village)
11	I11	Female	28	Community (Buahan Village)
12	I12	Female	34	Community (Buahan Kaja Village)
13	I13	Female	27	Community (Puhu Village)
14	I14	Female	30	Community (Kerta Village)
15	I15	Female	52	Government
16	I16	Female	36	Government
17	I17	Male	49	Government
18	I18	Male	27	Media
19	I19	Female	28	Media
20	I20	Male	42	Media

Data collection

FGD guides were developed to cover four topics: Stunting, on-going community-oriented medical education, cross-sector collaboration, and primordial prevention through the future brides and grooms accompaniment using ELSIMIL application. Three facilitators conducted the FGDs: A public health scientist experienced in qualitative research (MIW, PhD in public health), a social OBGYN subspecialist experienced in developing COME (GMB, social OBGYN subspecialist), and a note taker who used to be the head of COME unit (LGP, MPH). All facilitators were PentaCOME project staff. PentaCOME is the community-oriented medical education involving pentahelix model, a collaboration of Warmadewa University, the Ministry of Education, Culture, Research, and Higher Education, and PT. Sido Muncul. It is one of Matching Fund Kedaireka projects which were introduced by the Ministry of Education, Culture, Research, and Higher Education.

In-depth interviews were conducted to explore informants' perception primarily regarding stunting primordial prevention through the future brides and grooms accompaniment using ELSIMIL application. They were conducted by five interviewers (AGI – PhD in Biology, TS – M.Repro, MP – OBGYN specialist, KTK – MPH, and MDW – MSc in Biology). All of them are lecturers who had supervised COME implementation in Payangan District previously. Each interviewed four interviewees. All pentahelix model representatives were interviewed, including business representatives who failed to attend both FGDs. Each interview last for about 60 min.

Data analysis

All interviews and FGDs were digitally recorded and transcribed verbatim. An inductive data analysis was used: Two research team members (MIW – PhD in public health and GMB – Social OBGYN subspecialist) initially grounded themselves in the transcript to explore the themes that would emerge without knowing what to expect. Codes were then developed based on the emerging themes. The codes were imported into ATLAS.ti and coded by the same two research team members. Any discrepancies in the coding were discussed thoroughly until agreement was achieved about which codes were added. Constant comparison was conducted by recoded the coded transcript using the revised coding scheme. The themes were then displayed using the social ecological model.

Results

Several barriers to and facilitators of stunting primordial prevention through the future brides and

grooms accompaniment emerged from the interviews and FGDs, from not knowing about ELSIMIL application to those associated with traditional village institution policy. We applied the social ecological model as a framework to organize the stunting primordial prevention barriers and facilitators at five levels: the intrapersonal level, interpersonal level, institutional level, the community level, and the policy level. In this paper, the community level refers to the family support team from nine villages in Payangan District.

Intrapersonal level

Insufficient knowledge about the ELSIMIL application

In both FGDs, participants, other than from the family support teams, reported a lack of information about the ELSIMIL application: There are too few promotional leaflets in the community health center and nearly no promotions in the well-known social media platform. Some found out about the ELSIMIL campaign only when they attended the FGDs. They could not try the application since it is intended merely for the future brides and grooms. Others overlooked the campaign because they thought stunting was no longer a problem in Gianyar Regency (only in Karangasem Regency). Finally, some participants recounted stories of people not downloading ELSIMIL because they were pregnant before marriage and therefore not eligible as future brides and grooms.

There is also a lack information about premarital counseling

Some participants recounted stories of people not knowing about premarital counseling. They did not know when, how often, and how many times future brides and grooms should have counseling. One participant mentioned that she never had premarital counseling before her marriage so she did not see the necessity to do so. Several asked about whether the second marriage still needs premarital counseling considering they had experience from their first marriage.

“No pregnancy, no marriage” motto

Beliefs among some Balinese that to proceed to marriage, women should get pregnant first. FGD participants and key informants stated that some women married when they were pregnant (few weeks gestational age) and therefore were not eligible for ELSIMIL accompaniment. Some of them did not get antenatal care accordingly in the first trimester because they were not married yet.

“No pregnancy, no marriage has become hashtag for some Balinese. They only marry when the future brides get pregnant. Once the future brides get pregnant, they are not eligible

to use ELSIMIL anymore.” (Academician, female, 32-years-old).

Low perceived risk of stunting

The low motivation to follow the future brides and grooms accompaniment using ELSIMIL application has to do with the low perceived risk of stunting. One FGD participant mentioned that Gianyar Regency has the lowest stunting prevalence in Bali Province.

“Gianyar Regency has the lowest stunting prevalence among other regencies in Bali. It is currently at about 5%” (Government, female, 52 years old).

One participant got confused with the data and considered them quite unreliable because the significant decrease in stunting prevalence within the past 4 years was simply too good to be true.

“The stunting prevalence in 2018 was 12.1%. It became 11.1% in 2019 and 5.1% in 2021. There were no significant interventions other than the usual. It is simply too good to be true” (Academician, male, 77-years-old).

Interpersonal level factors

Social norms regarding premarital pregnancy

When asked about social norms regarding premarital pregnancy, informants and FGD participants cited that having children, primarily sons, during married life as the most important condition. Therefore, some women are, by social norms, encouraged to get pregnant before marriage to ensure they meet such most important condition.

“People keep asking when you get pregnant to a married woman... These norms are quite annoying... Premarital pregnancy is considered as an achievement.” (Community, female, 34 years old).

Social pressure from the community to use ELSIMIL

When discussing whether there was social pressure in the communities to use ELSIMIL, FGD participants, particularly from family support team, described those who did not use ELSIMIL 3 months before marriage as individualistic and unconcerned about their negative contribution to stunting. Some participants described that they actively seek future brides and grooms and encourage them to use ELSIMIL for their own benefits.

Interviewer: *Have you ever pushed future bride or groom to use ELSIMIL?*

Participant 1: *Yes. I pushed my relative to use ELSIMIL 3 months before marriage. My other relative*

is not eligible because she is pregnant already. I was upset. (Community, female, 29-years-old).

Participant 2: *I warn my relative to use ELSIMIL... It is government policy so we have to uphold such policy.* (Community, female, 31 years old).

Institutional level factors

Insufficient health promotion and communication for the future brides and grooms accompaniment program

Most FGD participants, except from family support team community and government, who knew about future brides and grooms accompaniment program learned about it when they were invited to the FGD or during the PentaCOME webinar. They never heard or read about it from any social media, television ads, radio, or posters. FGD participants also discussed which media should be used to disseminate the program. Some participants from community suggested using “threatening” messages to get future brides and grooms enrolled, for instance, with threat of sanctions or fines. Participants from academician disapproved with such idea and suggested the awareness campaign regarding the risk of stunting instead.

“I think the focus should be on the awareness of stunting and its preventable underlying conditions rather than implementing sanctions or fines” (Academician, male, 77 years old).

Participants from government and business spontaneously remembered *PeduliLindungi* Campaign as an effective program. They described *PeduliLindungi* as meticulous in implementation (details about first-degree relative are recorded), insistent (it gives notification and keeps on updating both data and application), mandatory (there is no way not to use it unless we stay at home all the time), and informative (we can learn about the illness and preventive measures).

“If ELSIMIL campaign follows the way PeduliLindungi (i.e., COVID-19 vaccination electronic application) was promoted, then the success is guaranteed” (government, female, 52-years-old).

Limited personnel for the ELSIMIL campaign

Key informant and FGD participant believed that the limited number of staff for ELSIMIL campaign in the community health center contribute to the low awareness in the society.

“Our midwives are busy focusing on the maternal and pediatric health as well as family planning programs. They need assistants” (government, female, 36-years-old).

However, other FGD participant described that limited personnel should no longer be a problem

because there are human development cadres in every villages. They are selected community cadres who have concern and are willing to dedicate themselves to taking part in human development in the village, especially in monitoring and facilitating the convergence of stunting reduction.

Community level factors

Inhibition social norms

Informants and FGD participants, primarily from family support team, reported inhibiting social norms as a barrier. “No pregnancy, no marriage” motto which has become social norms for certain community inhibited their effort to recruit future brides and grooms for accompaniment. Fortunately, National Population and Family Planning Agency has collaborated and coordinated with traditional village institution specifically dealing with this obstacle.

Interviewer: *What needs to be done to overcome this barrier?*

FGD participant: *In other religion, for example Muslim and Christian, future brides and grooms are obliged to present pre-marital counseling medical certificate. Perhaps, Hindu can follow their examples.* (Academician, female, 32 years old)

FGD participant: *As a matter of fact, we, at the National Population and Family Planning Agency, has collaborated with traditional village institution. We will do what they [other religions] have done soon.* (Government, male, 49 years old)

Policy level factors

Presidential Regulation No. 72 of 2021 regarding the stunting reduction acceleration

Informant and FGD participant reported that Indonesian Government were very serious in reducing stunting by issuing Presidential Regulation No. 72 of 2021. The National Population and Family Planning Agency was appointed as the stunting reduction acceleration team coordinator.

“We offered the concept of family planning towards a quality family with an orientation toward reducing stunting” (Government, female, 52-years-old).

FGD participant, from academician, stated that an effort that can be done to accelerate the stunting reduction is to ensure that every bride and groom are in an ideal condition to get married and get pregnant. With ELSIMIL, the bride and groom have been intervened 3 months before the marriage. The intervention can be broken down into three strategies, pre-conception, pregnancy, and post-delivery.

"I think this PentaCOME program is intended primarily to prevent stunting from the upstream ... from pre-conception" (Academician, male, 77-years-old).

The family support team which consists of midwives, the family empowerment and welfare support team, the National Population and Family Planning Agency cadres is considered adequate to handle the task.

"The family support team got a 3-day orientation program on 17 May 2022 until 19 May 2022 in Sanur" (Government, female, 36-years-old).

Discussion

Various studies have been developed to determine stunting initiatives effectiveness as well as barriers and facilitators in implementing such initiatives [1], [2], [3], [15], [16], [17], [18], [19]. An important aim of this study is exploring the perceived barriers and facilitators to stunting primordial prevention through future bride and groom accompaniment using ELSIMIL application. This article analyzes unique in-depth interview data and is part of our ongoing PentaCOME project which extends intervention from the first 1000 days of life to include future bride and groom. The social ecological model applied here to structure themes emerged from interviewees is a well-defined model that acknowledges the complexity of how individuals make decisions and take actions [20], [21], [22], [23], [24]. Our findings reveal several barriers to stunting primordial prevention through future bride and groom accompaniment at the intrapersonal, interpersonal, organizational, community, and policy level as described in the model.

We identified individual-level barriers to vaccination as well as facilitators of stunting primordial prevention through future bride and groom accompaniment. An essential next step is to translate these barriers and facilitators into proposed solutions to improve primordial prevention effectiveness, using well-defined theory such as Lawrence Green Theory [22], [25] and Health Belief Model [26], [27], [28], [29]. For instance, our key informant suggested using fear-based approach especially for non-participation. This proposed solution highlights the importance of enabling factors (Lawrence Green Theory) and self-efficacy (Health Belief Model) as the main drivers of health behavior. The Health Belief Model proposes that when faced with a health risk (perceived susceptibility) with profound impact (perceived severity), people will take actions to prevent it from happening, unless if they think that the barrier (perceived barrier) is too much to overcome. In other words, people at health risk are empowered

by equilibrium between perceived susceptibility and self-efficacy. A risk communication will lead to adverse consequences if it is only employing perceived susceptibility without assuring high self-efficacy. A well-developed health promotion should provide a concise, correct, clear, and do-able message to target population.

Stunting has prolonged harmful consequences on the child. Some of those consequences include poor cognition and educational performance which lead to lost productivity and in the end, low adult wages. When associated with obesity later in childhood, it also increases risk of nutrition-related chronic diseases in adult life [1], [2], [3]. Payangan regency is facing a sustained stunting incidence that has not been controlled by primordial prevention, posing a risk for the future generations. Stunting primordial prevention through future bride and groom accompaniment is considered a highly effective initiative that only requires future bride and groom registered on ELSIMIL application 3 months before their marriage. The risk communication should tap into this feeling of risk (to enhance individual's perceived susceptibility to producing future generation suffering from stunting, and educate them about the severity of stunting), while concurrently, accompany them so they feel confident in being able to act (self-efficacy in handling modifiable conditions as primordial prevention to stunting) to effectively mitigate that risk. This initiative should not only deal with lack of knowledge, but also inspire behavioral belief in the program to produce a golden future generation. The ultimate goal is to achieve zero stunting in the community.

A very salient individual level mentioned in in-depth interview was insufficient knowledge about the ELSIMIL application. The future brides and grooms thought that they could register to ELSIMIL application any time before marriage (the requirement is 3 months before marriage). They also thought that they could register even though the future brides are pregnant (the requirement is the bride has not got pregnant before marriage). This barrier can be mitigated through the development of Google Form adopted from questionnaire installed in ELSIMIL. The family support team, assisted by medical students, could utilize this Google Form to accompany future brides and grooms who do not meet the ELSIMIL requirements. India has taken steps to empower people to engage in stunting prevention [30], [31], [32], [33], [34], [35], [36], [37], [38]. The fact that stunting starts from pre-conception when an adolescent girl who later becomes mother is undernourished and anemic has led India to develop stunting prevention program with adolescent girl as target population. They found that poverty is not a clear cause of stunting since there are stunted children even among the richest households. Even when families have access to nutritious food, young children are not given a nutrient dense diet and merely half of mothers nurse their children below 6 months of

age. The sustained risks such as stunting, which are frequently invisible, need to be made visible, so that families and communities can do something about it. In collaboration with UNICEF, India initiated large-scale stunting prevention programs, which include dealing with adolescent girls who later become mothers. India has reported a decreasing trend in child stunting from 48% in 2006 to 35% in 2018. Even with impressive reduction, 40.6 million children are stunted in India in 2018. Hence, the adolescent girls accompaniment should become continuous and ongoing program. Based on our findings, to address lack of knowledge in the population that could deter stunting prevention program, health promotion should include additional adolescent girls, not just those who are about to marry in 3 months.

At the interpersonal level, barriers expressed by informants were related to the social norms of poor marriage culture: "No pregnancy, no marriage" motto. There is competing social pressure both for and against pre-marital accompaniment, although the latter was considerably less common. Some informants in this study indicated that in the near future, there will be social pressure for people to engage in the future brides and grooms accompaniment program, as traditional village assembly has been engaged in this program. Those who do not register in ELSIMIL will be considered uncaring for the future generation and irresponsible in the context of high quality human resource provision offered by such pre-marital accompaniment program (although a few also mentioned social pressure to not register in ELSIMIL; feeling laughed at for doing unnecessary preventative measures). The diffusion of innovation theory, [39], [40], [41] the social learning theory, [42], and the theory of planned behavior [43], [44], [45] emphasize the importance of social networks (i.e., the others' opinions) in making decision about health behavior. The stunting primordial prevention through future brides and grooms accompaniment should be driven by these theories and attempts to influence local norms by providing education through influential traditional figures, as well as identifying well-connected cadres in communities to champion pre-marital accompaniment program – including but not limited to respected elders, teachers, local celebrities, and local neighborhood authorities.

Barriers that emerged at the institutional level had to do with health system weaknesses, such as insufficient promotion of ELSIMIL campaign, the inactivity of auxiliary community health center post COVID-19 pandemic, poor selection of family support team members, low frequency of ELSIMIL campaigns, and insufficient person in-charge for the program. Engagement in the program can be improved in a manner similar to interpersonal level – engaging well-connected cadres in communities to champion pre-marital accompaniment program. For quicker solution, program extension to encompasses adolescent girls,

although hypothetical, might result in better and faster achievement of stunting reduction acceleration team target. The community health center needs to reactivate the monthly workshops (for internal staff) and the quarterly workshops (for cross-sector stakeholders) to raise awareness that stunting prevention is not merely the community health center domain, but cross-sector stakeholders instead. In general, interventions at the institutional level to improve future brides and grooms accompaniment uptake can be modeled in accordance with framework introduced by Obrist *et al.* The framework consists of five composites: Acceptability, adequacy, affordability, accessibility, and availability. The present study provides insights into acceptability and adequacy dimensions.

At the community level, barriers cited included inhibition social norms, in accordance with intrapersonal and interpersonal levels. Contingency strategy, supported by enabling factor (i.e., policy level), is necessary to meet the stunting primordial prevention; for instance, in India, [30], [32], [34], [35], [36], [37], [38] South Africa, [15], [17], [17], [18], [19] North Korea, [46], [47], [48], [49], and Brazil, [50], [51], [52], a large-scale stunting prevention program involving adolescent girls was initiated to reduce a relative 16–20% reduction in stunting incidence. The combination of pre-marital accompaniment program and adolescent girls stunting primordial prevention program has proven to be effective in both urban and rural areas. Informants' preference for adolescent girls stunting primordial prevention program is also important to highlight. This has usually been done in collaboration with the school health program (which currently becomes essential public health effort). The future brides and grooms accompaniment in the urban areas of West Java achieved a huge coverage above 70%, while similar pre-marital accompaniment in Tabanan achieved only 17% coverage [14]. In our study, the future brides and grooms accompaniment program in the rural areas were fairly inaccessible to target population (despite having well-connected cadres to the villagers). On the other hand, the pre-marital couples in urban and peri-urban areas, whose population are diverse (i.e., many immigrant citizens), were much more accessible to the family support teams.

Our study and others have focused on knowledge (i.e., of future brides and grooms, family support teams, and cross-sectoral stakeholders), social norms regarding marriage, and perception about health services as essential components to understand pre-marital accompaniment program's outcome. However, policy level plays a more important role in the stunting primordial prevention program. Intrapersonal, interpersonal, institutional, and community levels barriers are easy to identify and break; policy level barriers are much more difficult, but normally result in better improvement. By the time, this manuscript is developed, the stunting reduction acceleration program, which was initiated earlier this year, has reached numerous villages. They establish

human development cadres which are directly under sub-district head. These cadres overcome insufficient amount of the auxiliary community health service staff and therefore expedite program target achievement. The stunting reduction acceleration program also adopts the pentahelix model which engages academician, businessmen, community, government, and media. The pentahelix empowerment is hoped to bring about “zero stunting for golden generation.”

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Conclusion

Barriers to stunting primordial prevention were multifactorial involving multilevel in the social ecological model. Lack perceived risk of stunting is barrier at the intrapersonal level. At the interpersonal as well as community levels, social norms regarding premarital pregnancy hinders the primordial prevention. Limited personnel in the community health center are an obstacle at the institutional level. A well-developed risk communication campaign is required to enhance population's knowledge about the importance of preventing stunting from the upstream. Developing contingency strategy to help future brides and grooms which do not meet ELSIMIL requirement should be explored and implemented to help facilitate their engagements. Engaging enabling factors (i.e., government and the traditional village assembly) will bring about quicker and better program target achievement. The flexible strategies are required to serve diverse communities within urban, peri-urban, and rural areas that have different sociocultural backgrounds. Finally, cross-sector collaboration (known as pentahelix collaboration) needs to be empowered to achieve the “zero stunting for golden generation” goal accordingly.

Acknowledgments

We thank all the participants of the FGDs as well as the key informants for agreeing to be part of our study and sharing their time with us. We acknowledge the work of community-oriented medical education (COME) instructors for their contribution to the implementation of this study.

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