

Ulep, Valerie Gilbert

Working Paper

Breaking the curse: Addressing chronic malnutrition in the Philippines using a health system lens

PIDS Discussion Paper Series, No. 2021-41

Provided in Cooperation with:

Philippine Institute for Development Studies (PIDS), Philippines

Suggested Citation: Ulep, Valerie Gilbert (2021) : Breaking the curse: Addressing chronic malnutrition in the Philippines using a health system lens, PIDS Discussion Paper Series, No. 2021-41, Philippine Institute for Development Studies (PIDS), Quezon City

This Version is available at:

<https://hdl.handle.net/10419/256876>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

DISCUSSION PAPER SERIES NO. 2021-41

Breaking the Curse: Addressing Chronic Malnutrition in the Philippines Using a Health System Lens

Valerie Gilbert T. Ulep



The PIDS Discussion Paper Series constitutes studies that are preliminary and subject to further revisions. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements. The studies under the Series are unedited and unreviewed. The views and opinions expressed are those of the author(s) and do not necessarily reflect those of the Institute. Not for quotation without permission from the author(s) and the Institute.

CONTACT US:

RESEARCH INFORMATION DEPARTMENT
Philippine Institute for Development Studies

18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, Quezon City, Philippines

publications@pids.gov.ph
(+632) 8877-4000

<https://www.pids.gov.ph>

Breaking the Curse: Addressing Chronic Malnutrition in the Philippines Using a Health System Lens

Valerie Gilbert T. Ulep

PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES

December 2021

Abstract

Widespread chronic malnutrition in the Philippines is a human development disaster, which needs critical and urgent attention. Its consequences are multifaceted and extreme. Hence, it should be at the front and center of economic and health dialogue. This paper provides the current state of child stunting, a marker of chronic malnutrition. Using a health system lens, we have identified different challenges impeding the delivery of cost-effective health and nutrition interventions. Also, we provided health system-specific solutions in addressing the problem.

Keywords: malnutrition, child stunting, health systems

TABLE OF CONTENTS

I.	Introduction	1
II.	Understanding the causes of chronic malnutrition	5
III.	Adaptive challenges in key and nutrition health interventions	9
IV.	Moving forward.....	12
V.	Bibliography	15
	Appendices.....	18

LIST OF FIGURES

Figure 1. Under-5 stunting rates in Asian selected countries, 2019	1
Figure 2. Under-5 stunting rates in selected ASEAN countries, 2000-2020.....	2
Figure 3. Under 5 stunting vs. GNI, Philippines and Viet Nam	2
Figure 4. Growth rates of GDP per capita and stunting rates by Philippine regions, (2000-2015).....	3
Figure 5. Prevalence of stunting, by age and socio-economic status	4
Figure 6. Mean z-score (height-for-age), by socio-economic status	4
Figure 7. Conceptual Framework.....	5
Figure 8. Proportion of underweight women and proportion of pregnant women, by age.....	6
Figure 9. Median height of women aged >19 years old.....	7
Figure 10. Classification of provinces and HUCs based on capacity and burden of malnutrition	14

LIST OF TABLES

Table 1. Coverage of selected indicators before and during pregnancy	7
Table 2. Uptake of essential maternal and child healthcare services.....	8
Table 3. Service coverage of indicators for prevention and treatment of infection.....	9
Table 4. Challenges in health financing	10
Table 5. Challenges in service delivery	11
Table 6. Challenges in health governance.....	12

APPENDICES

Appendix A. List of nutrition specific interventions.....	18
Appendix B. List of nutrition sensitive interventions.....	18

Breaking the Curse: Addressing Chronic Malnutrition in the Philippines Using a Health System Lens

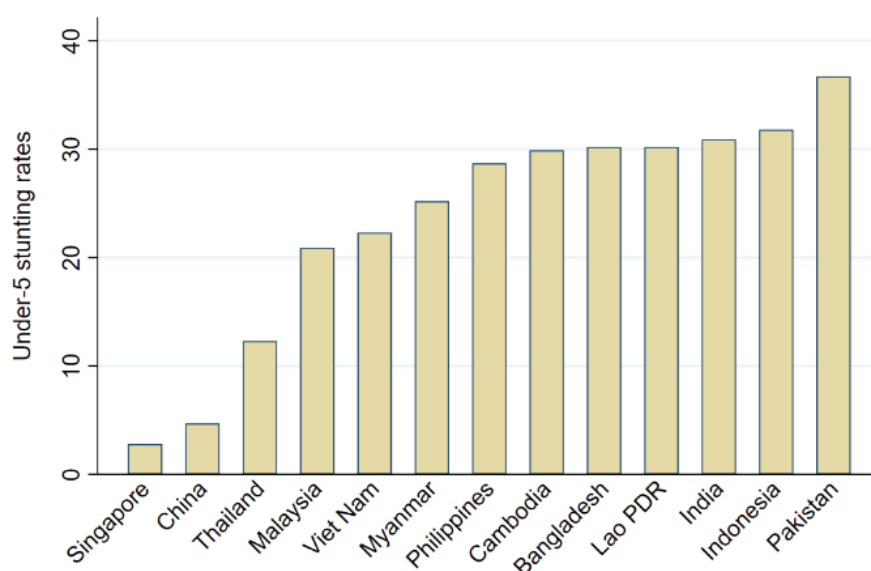
Valerie Gilbert T. Ulep¹

I. Introduction

Filipino children, on average, are short compared with children living in other countries. About a third (or 3.5 million) of Filipino children under five years old are stunted,² a marker of chronic malnutrition (UNICEF 2021). The Philippines is expected to become an upper-middle-income country (UMIC) until 2023, but the prevalence of stunting remains comparable to the poorest countries in the world. The average stunting prevalence in UMIC is only 14%. The Philippines is one of the countries with the highest burden of stunting in ASEAN (see **Figure 1**).

Chronic malnutrition is a human development disaster. Its consequences are multifaceted and extreme, which reverberate throughout the lifespan. Chronic malnutrition leads to poorer cognitive ability and educational outcomes, and lower adult earnings. Improving the nutritional status of children hence becomes critical and should be at the front and center of health and economic policy dialogue.

Figure 1. Under-5 stunting rates in Asian selected countries, 2019



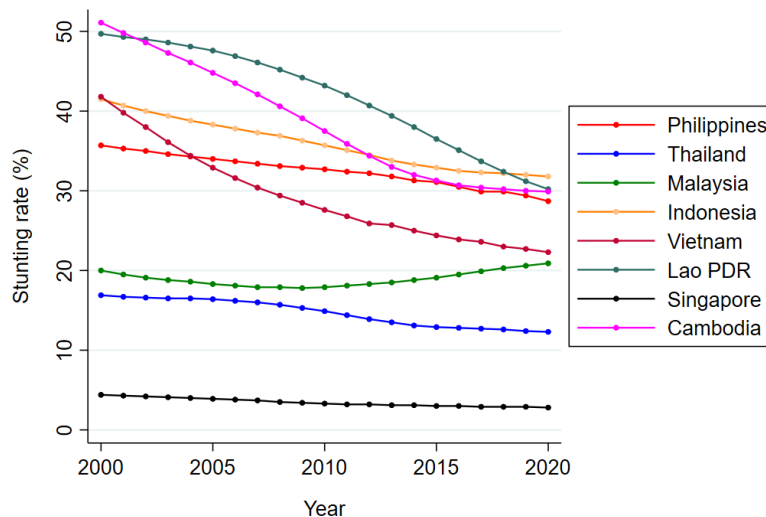
Source: Analysis of data from UNICEF 2021

¹ VGU is a Research Fellow at Philippine Institute for Development Studies. The findings of this paper are a compilation of different studies of the author.

² Children with height for age z-score below -2 standard deviations (SD) are considered stunted.

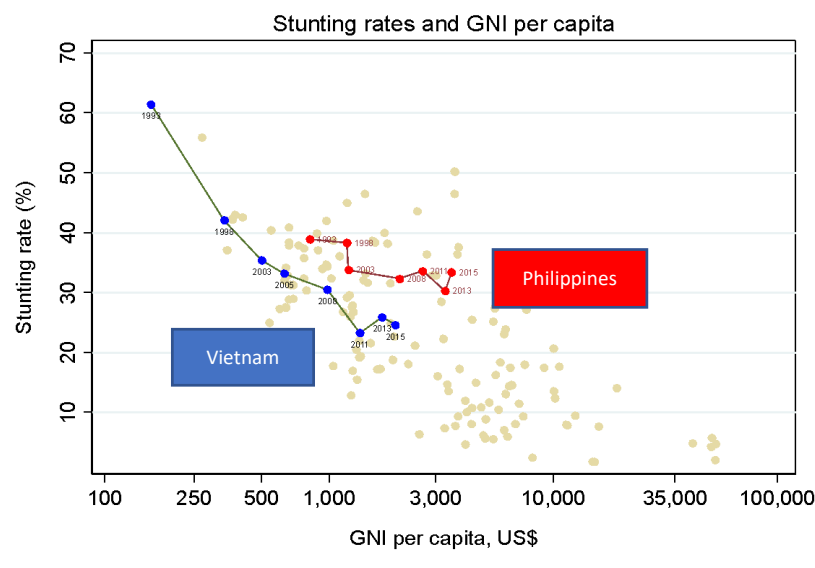
While stunting in the Philippines had modestly improved in the last three decades, the rate of decline was relatively slow compared to other countries with similar levels of income. Most low and middle-income countries recorded a large decline in the prevalence of stunting. From 2000 to 2018, stunting prevalence in the Philippines declined only by 0-1% annually. In contrast, well-performing countries such as Vietnam experienced about a 5-6% annual decline (UNICEF 2021). **Figure 2 shows the trend in the prevalence of stunting in the ASEAN region.**

Figure 2. Under-5 stunting rates in selected ASEAN countries, 2000-2020



Source: Analysis of data from UNICEF, 2021

Figure 3. Under 5 stunting vs. GNI, Philippines and Viet Nam



Source: World Development Indicators

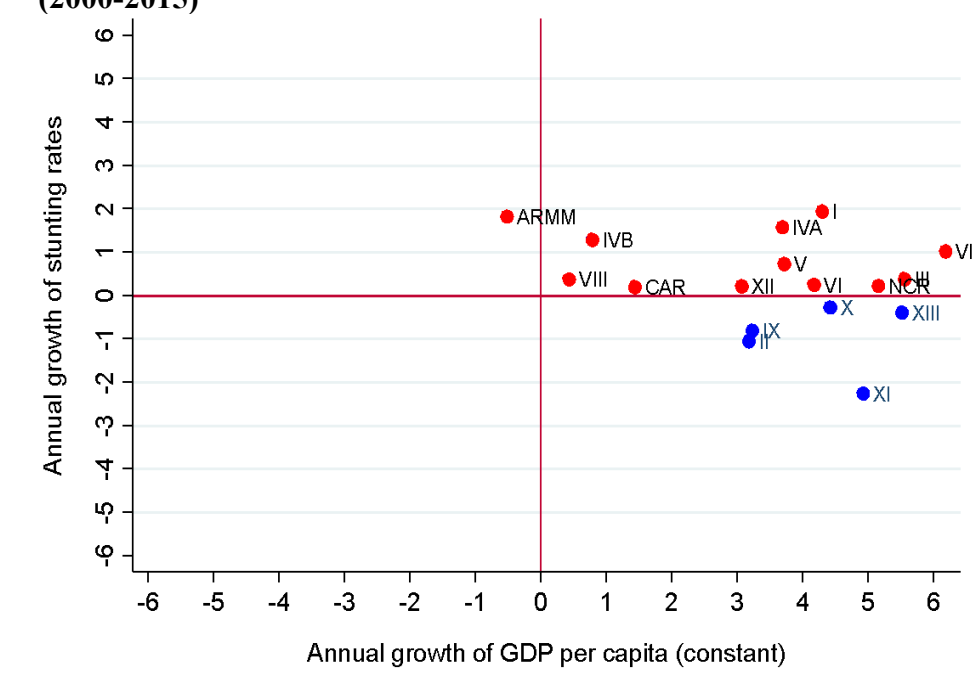
Note: Red dots (Philippines); Blue (Vietnam); khaki (other countries)

Enigmatically, the rapid growth in national income in recent decades did not result in a large improvement in chronic malnutrition. There are two pathways by which economic growth could reduce chronic malnutrition. First, economic growth increases investments and creates employment, positively impacting income, maternal education, and food security. Second, as

the economy grows, public spending and social sector investment also increase (e.g. health and education). These two pathways are expected to have a direct impact on reducing chronic malnutrition.

This is not the case in the Philippines. While the country's GDP per capita (in real terms) has increased by 3-4% annually from 2000 to 2015, the annual reduction of stunting prevalence hovered only at 0-1% (World Bank, 2021). **Figure 4** shows the growth in regional GDP per capita and stunting prevalence. Twelve of the 17 regions have registered positive growth in regional GDP per capita (in real terms), but the prevalence of stunting in 11 regions has increased.

Figure 4. Growth rates of GDP per capita and stunting rates by Philippine regions, (2000-2015)

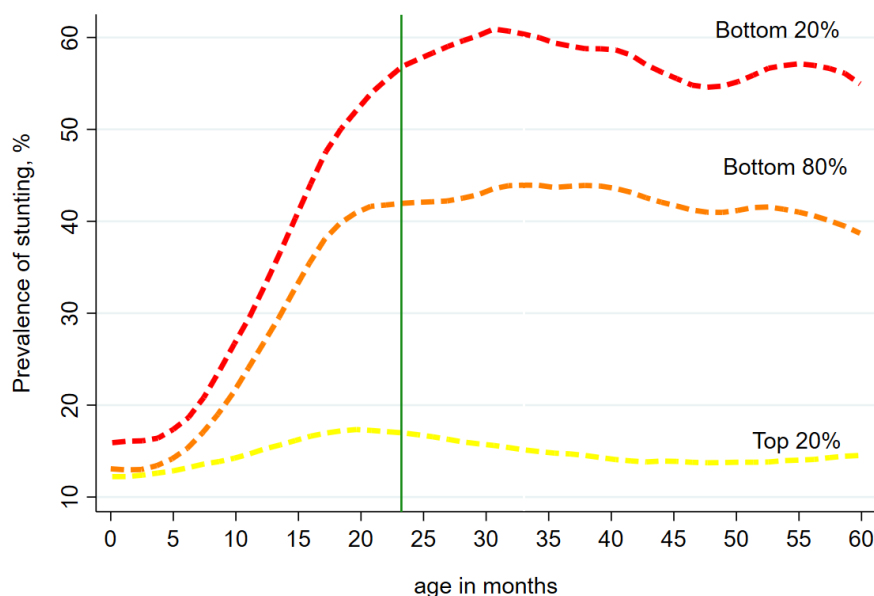


Source: Raw data from the Philippine Statistics Authority and the Food and Nutrition and Research Institute.
Note: annualized stunting data from FNRI were interpolated.

The high prevalence of stunting was exacerbated by the large differences across socio-economic status. In 2015, about 49% of children in the bottom 20% of the population were stunted compared to 14% in the top 20% (UNICEF, 2021). The 34-percentage point absolute difference makes the Philippines one of the countries with the highest level of disparity. Globally, the average gap was only 11 percentage points. Reducing the large disparity across socio-economic status is a critical strategy in reducing overall prevalence.

The difference between poor and non-poor significantly varies across age. Understanding the timing of ‘growth faltering’ provides an opportunity to understand when to implement key nutrition and health interventions. The gap in stunting prevalence between poor and non-poor is negligible during the neonatal period. However, the gap rapidly accelerates from 6 months until 24 months. Strategic interventions therefore should focus during the ‘acceleration phase’ (see Figure 5).

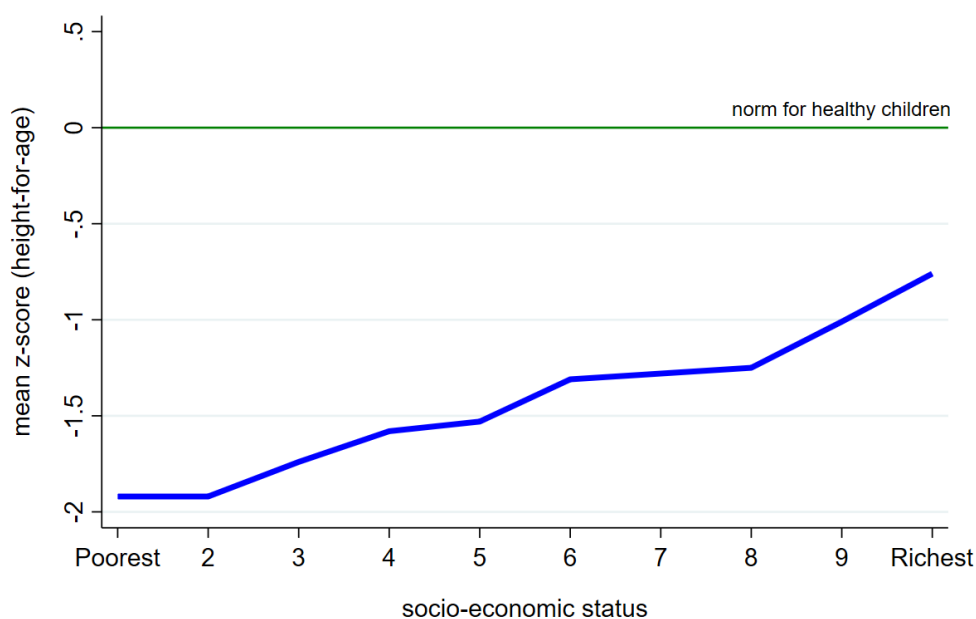
Figure 5. Prevalence of stunting, by age and socio-economic status



Source: Analysis of 2015 National Nutrition Survey

Even the height-for-age score of children from richer segments of the population was subpar relative to global standards (See Figure 6). In 2015, the majority of poor Filipino children were stunted. However, the average height-for-age z-score (HAZ) of the richest socio-economic group was also below the WHO growth standards. This suggests that even the richest segment requires interventions to further improve the linear growth of children.

Figure 6. Mean z-score (height-for-age), by socio-economic status



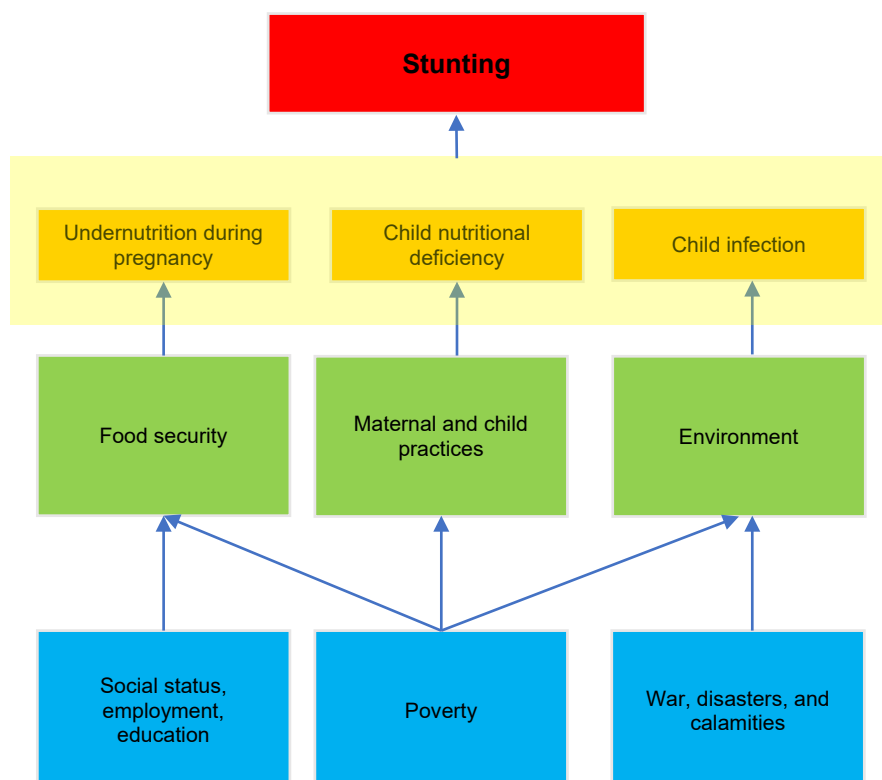
Source: Analysis of 2015 National Nutrition Survey

II. Understanding the causes of chronic malnutrition

Stunting is a result of chronic and recurrent ‘stresses’ that the child encounters during a critical period, which starts at pregnancy until the first 1000 days of life. The framework in Figure 7 demonstrates the three (3) direct or proximal stresses that increase the risk of stunting: 1) undernutrition during pregnancy, (2) child nutritional deficiency, and (3) repeated infection or disease. Distal factors, such as food security, maternal and child health practices, and environment reinforces these proximal stresses in the undernutrition pathway.

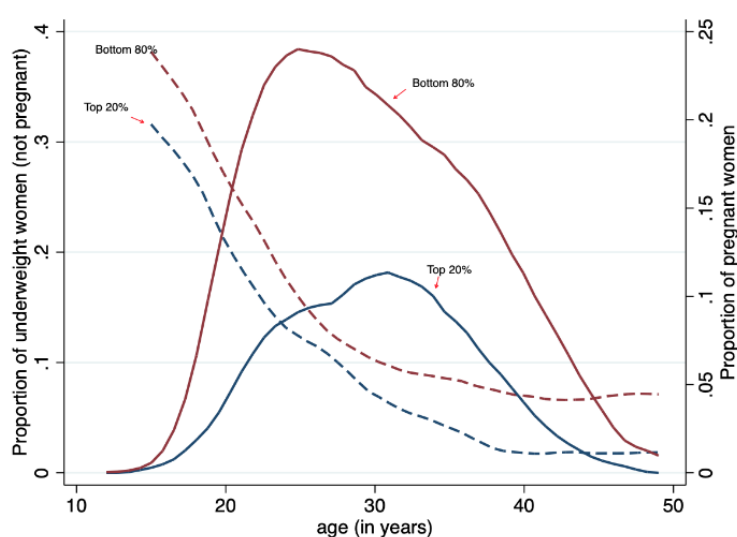
Mothers with chronic energy deficiency (i.e., underweight) increase the chances of anthropometric failure in children. The intrauterine transmission of maternal underweight during pregnancy gives infants a higher risk of low birth weight infants that may progress to childhood undernutrition (Mbuya et al. 2010; Khan et al. 2019). Once the child is born, stress continues through constant exposure to poor dietary intake and infection. Poor dietary intake is a function of both food security and child feeding and rearing practices. Food security means that households have physical, social, and economic access to sufficient and nutritious food that meets their needs and preferences (IFPRI 2021). Optimal child feeding, on the other hand, refers to the observance of recommended infant and young child feeding (IYCF) practices, which include exclusive breastfeeding until six months and age-appropriate complementary feeding. Constant exposure to infections has negative effects on the linear growth of children. Infection decreases food intake, impairs nutrient absorption, and impairs the transport of nutrients to target tissues (Stephensen 1999; Dewey and Mayers 2011). Poor access to safe drinking water, improved sanitary facilities lead to a higher incidence of infectious diseases (Echazu et al. 2015; Hutton and Chase 2017; CDC 2020). Lack of access to essential treatment for infection such as zinc and ORS supplementation worsen disease prognosis.

Figure 7. Conceptual Framework



Maternal undernutrition. In 2015, about 11% of adult women were considered as underweight chronically energy deficient. However, the prevalence of underweight among young adolescents (18-20 years old) was almost 28%, with significant differences across socioeconomic status. An in-depth analysis of the National Nutrition Survey (NNS) suggests a sobering pattern. A large proportion of poor mothers were underweight during their peak of child-bearing age (early 20s). In contrast, the proportion of underweight among non-poor mothers was significantly lower during their peak of child-bearing age (See **Figure 8**). Poor women were more likely to get pregnant at a young age during the period when undernutrition was high. The importance of delaying pregnancy, particularly among the poor during young adolescence therefore is critical.

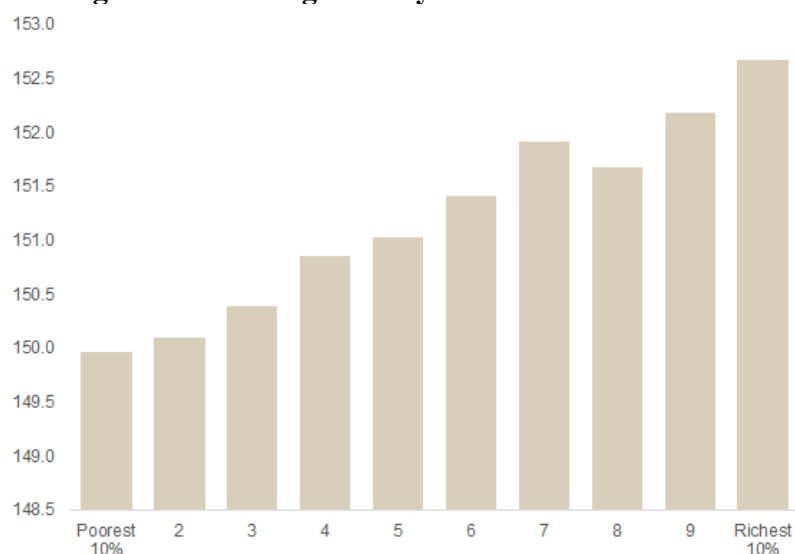
Figure 8. Proportion of underweight women and proportion of pregnant women, by age



Source: Analysis of 2015 National Nutrition Survey

In addition to maternal undernutrition, maternal height is a strong predictor of child nutrition (Hernández-Díaz et al. 1999; Özaltın 2010; Hambidge et al. 2012; Stockman 2012; Khatun et al. 2019). Short maternal height is associated with low birthweight and eventually child stunting partly because of the limitations on the mother's physical attributes; hence limiting fetal growth in utero. Mothers with shorter height may also have decreased macronutrient (i.e., protein) and energy stores and smaller reproductive organs, which may also provide smaller room for fetal development (Addo et al. 2013). In 2015, Filipino women aged 19 years were relatively shorter compared to the global average, with significant disparity across socioeconomic status (see **Figure 9**).

Figure 9. Median height of women aged >19 years old



Source: Analysis of 2015 National Nutrition Survey

Pregnancy could determine the anthropometric stature of children. Therefore, adequate and high-quality antenatal care (ANC) interventions are important during this period. ANC is the entry point of nutrition and health education. It is the period when parents are given knowledge on optimal nutrition for the child, appropriate supplements, and correct child feeding and rearing practices. If a mother has a complete and high-quality ANC, she will be monitored and any problem she might encounter that could affect the child's nutrition can be resolved. In 2017, almost 25% of Filipino mothers do not have sufficient ANC with a large disparity across socio-economic status.

The quality of the ANC is equally important (PSA 2017). About 70% of mothers did not receive appropriate advice on maternal and child nutrition during their ANC visits. Regardless of socio-economic status, Filipino mothers were not receiving quality ANC. Table 1 shows the coverage of selected health and nutrition indicators provided before and during pregnancy that are critical for the health and nutritional status of the child.

Table 1. Coverage of selected indicators before and during pregnancy

Socio-economic status	Contraceptive prevalence rate (%) *	Mothers without optimal number of ANC (%) *	Iron and Folic Acid Supplementation among pregnant women (%) **	% of mothers with on-time ANC**
All	54.3%	24.2%	13.1%	69.5%
Poorest	55.0%	38.9%	9.5%	63.9%
Poor	59.6%	27.3%	11.2%	65.2%
Middle	55.8%	24.3%	12.7%	68.0%
Rich	52.3%	17.7%	16.4%	72.5%
Richest	48.1%	11.5%	17.2%	81.2%

Source: *2017 National Demographic and Health Survey - Philippine Statistics Authority; **2015 National Nutrition Survey - Food and Nutrition Research Institute

Child nutritional deficiency. Children should have access to adequate and high-quality nutrition. This includes breastfeeding within the first hour of life, exclusive breastfeeding in the first six months then continued breastfeeding with age-appropriate complementary feeding until two years old (WHO 2009). Sub-optimal infant and young feeding practices (IYCF) remain common in infants and children across socio-economic groups even among affluent mothers. In 2015, more than half of children aged 0-6 months were not exclusively breastfed and about 35% were not breastfed at the first hour of life (See **Table 2**).

In terms of complementary feeding, in 2018, only 3 in 10 Filipino children 6-23 months were meeting the minimum acceptable diet (MAD), which is the percentage of children 6–24 months of age who receive a minimum diversified diet and minimum meal frequency in addition to breastmilk (FNRI 2019). From the age of six (6) months, breastfeeding is no longer able to meet the energy requirements of children. Hence, adequate complementary food and continued breastfeeding are essential. Dietary imbalance during the critical window affects the linear growth of children. While the large disparity in the percentage of children with MAD is alarming and explains the gap in stunting that occurs after 6 months old, the extraordinarily low percentage of children with MAD even among the rich households is worth examining. This corroborates the growth deficit in children regardless of socio-economic status.

Food insecurity and poor observance could explain inadequate and poor-quality dietary intake. In 2018, the majority of Filipinos are food insecure (64%), with a large disparity across socio-economic status. About 88% of Filipinos from the poorest quintile were food insecure of which a quarter was considered severely food insecure in contrast to the 23% among the richest quintile (FNRI 2019). Food insecurity to adequate and high-quality diet, particularly high-protein during this critical stage of children,

Table 2. Uptake of essential maternal and child healthcare services

Socio-economic status	% of non-exclusively breastfed*	% of children breastfed >1 hour*	% incorrect knowledge about timing of exclusive breastfeeding *	% of incorrect knowledge about timing of complementary feeding*	% of children aged 6-23 months meeting Minimum Acceptable Diet (MAD)**	% of children 6-59 months who received Iron supplements (%) ***	% of children 6-59 months who received Vitamin A supplements ***
All	51.20%	43.10%	50.10%	33.80%	13.4%	28.2%	75.5%
Poorest	33.60%	37.60%	52.10%	37.50%	11.7%	25.1%	73.2%
Poor	39.40%	42.70%	50.00%	34.00%	12.4%	27.2%	80.8%
Middle	54.90%	39.40%	51.40%	33.40%	13.3%	31.8%	76.0%
Rich	64.20%	53.00%	49.50%	32.50%	13.4%	29.3%	73.3%
Richest	70.00%	47.20%	46.50%	30.10%	18.9%	29.9%	73.5%

Source: *2015 National Nutrition Survey - Food and Nutrition Research Institute; **2018 Expanded National Nutrition Survey - Food and Nutrition Research Institute; ***2017 National Demographic and Health Survey - Philippine Statistics Authority

Child infection. Filipino children particularly the poor are frequently exposed to infections. In addition to inadequate and poor diet, the frequent exposure to stresses such as infection negatively affects the linear growth of Filipino children. Chronic and recurrent infections have a significant effect on linear growth by affecting nutritional status. This occurs because infections may decrease food intake, impair nutrient absorption, increase metabolic requirements or catabolic losses of nutrients, and impair transport of nutrients to target tissues (Stephensen, 1999). The incidence of childhood diseases is determined by two general modifiable factors: environment and healthcare services. Poor access to safe drinking water and clean surroundings leads to a higher incidence of infectious diseases. Poor quality and quantity of healthcare services during prenatal, delivery, and postnatal periods put children at risk of repeated infections. In 2017, 6.1% of children aged 6-24 months had experienced diarrhea in the past two weeks, with children from the poorest quintile are twice more likely to experience diarrhea and pneumonia (PSA 2017). **Table 3** includes the service coverage to prevent and treat infection in children.

Table 3. Service coverage of indicators for prevention and treatment of infection

Socio-economic status	Zinc supplementation	ORS	Improved water source (WASH)	Improved Sanitation/toilet facility
All	24.4%	44.8%	94.7%	77.5%
Poorest	22.5%	42.5%	83.7%	46.3%
Poor	23.8%	45.7%	94.2%	68.2%
Middle	22.4%	48.1%	97.3%	81.2%
Rich	26.5%	46.6%	98.7%	93.2%
Richest	36.4%	40.6%	99.5%	98.5%

Source: 2017 National Demographic and Health Survey - Philippine Statistics Authority

III. Adaptive challenges in key and nutrition health interventions

The delivery of health and nutrition interventions should be comprehensive, converged, and continuous (3Cs) to be effective. Stunting is a result of chronic and recurrent stresses during the critical period in a child's life. Hence, all cost-effective health and nutrition interventions needed during young adolescence, pregnancy, postnatal care, and infant and child care must be available as a single health package (i.e., comprehensiveness). All interventions should converge. A child should receive all critical interventions and not only to a limited set of maternal and child services (i.e., convergence). Lastly, the delivery of intervention should be seamless through a robust referral system from community to primary care facilities to hospitals (e.g. continuity).

The longstanding problem of chronic malnutrition reflects the limited capacity of the system to provide 3Cs. Chronic malnutrition in the Philippines is not a technical problem but rather an adaptive problem that requires adaptive solutions. Addressing chronic malnutrition is not rocket science. Studies have already identified the cost-effective nutrition and health interventions necessary in reducing chronic malnutrition (Scott et al 2020; Keats et al. 2021). Studies have documented the experiences of successful countries in implementing them

(Scherpbier 2016; Beal et al. 2019; Van Minh et al. 2019; World Bank 2019; Huang 2020; Huicho 2020). **Appendix A and B** summarizes the key nutrition specific and nutrition sensitive interventions. Arguably, the problem lies in the limited capacity of the system to deliver these interventions in a comprehensive, converged, and continuous fashion. The problem therefore should be examined using a health system lens by identifying different challenges across the components of the health system that impedes the delivery of key and nutrition health interventions.

Issues and challenges of different health system components, particularly health financing, service delivery (i.e., health facilities and health human resources), and governance reflect adaptive problems in the provision of key health and nutrition interventions in the country. While nutrition is indeed a multi-sectoral problem that requires a whole-of-government and multi-sectoral solutions, the health sector remains and will always be the key agency in addressing the problem of chronic malnutrition. Most nutrition-specific interventions are channeled within the auspices of existing health system infrastructure. The health system challenges are classified into three (3): health financing, health service delivery, and governance. The first columns in Tables 4 to 6, '*Prerequisites*' are the necessary features of the health system to achieve 3Cs, while '*Challenges*' are the existing barriers/issues to achieve the *prerequisites*.

- **Health financing.** Adequate and sustained public financing for nutrition and health is critical. The government should cover a comprehensive package of cost-effective health and nutrition interventions (e.g., individual-based and community-based interventions), which include pre-pregnancy, pregnancy, postnatal care, and infant and child health services. The sources of financing are equally important. The financing sources of health and nutrition interventions should be well-delineated and should not be overlapping to avoid inefficiencies. Non-delineated and overlapping sources of financing, weaken the strategic purchasing power of the financial agent (e.g., PhilHealth). In advanced health systems, strategic purchasing is critical because it allows the government to demand healthcare providers (including LGUs) to increase access, and improve equity, efficiency and quality of health and nutrition interventions at a lower cost. **Table 4** outlines the prerequisites versus challenges in financing nutrition and health interventions.

Table 4. Challenges in health financing

Prerequisite	Challenges
<i>High public spending for nutrition</i>	National level: Nutrition-related expenditures were approximately Php 1,504.06 per capita, 0.92% share of GDP, and 7.70% share of total government expenditures (2017-2019). This is low compared to other countries.
<i>Higher spending on cost-effective nutrition/health interventions</i>	National: Majority of nutrition-related expenditures were for nutrition sensitive activities (95.7%), followed by specific activities (4.0%), with the least for enabling interventions (0.3%). LGUs: nutrition expenditures are highly varied and dependent on the local chief executive (LCE) priority. Allocations for nutrition sensitive, specific, and enabling interventions differ across different LGUs.

<i>Breadth and depth of health and nutrition package</i>	<p>PhilHealth: Lack of comprehensive health and nutrition package in the primary care benefit (PCB). PCB only covers limited nutrition and related interventions and is offered to the public sector facility.</p> <p>DOH: To augment the needs of LGUs, the DOH procures selected nutrition and health services (e.g., commodities, human resources, and health infrastructure) then provides them as grants to LGUs. However, the provision of grants is unsystematic and patchy. Random provision of nutrition grants to local governments not based on need or capacity of LGUs.</p> <p>LGU: highly variable depending on LCE.</p>
<i>Strategic purchasing of health and nutrition services.</i>	<p>Cross-cutting: The financing sources of nutrition and health interventions are overlapping and undelineated. PhiHealth, DOH, NNC, POPCOM, and local governments are financing nutrition and health services, most of these services are overlapping and uncoordinated.</p>

- Health service delivery.*** Health system should have adequate health facilities and human resources at different levels of care (e.g., primary care facilities, and hospitals) to meet the health and nutrition needs of the population. Primary care facilities (e.g., RHUs) are indispensable in the provision of basic health and nutrition services. “PHC is the initial point of contact for individuals, families, and communities in the healthcare system. PHC ensures that people receive comprehensive and continuous care, ranging from promotion, prevention and treatment of health and nutrition conditions” (Ulep et al. 2020, p.10). PHC allows health services to be closer to the people and communities. The organization of the service delivery system in communities is equally important. To achieve continuity and convergence of health and nutrition interventions, different levels of facilities must be integrated regardless of ownership. In other words, primary care facilities are connected to hospitals to facilitate and build referral systems. **Table 5** outlines the prerequisites versus challenges in the service delivery of nutrition and health interventions.

Table 5. Challenges in service delivery

Prerequisite	Challenge
<i>Presence of health facility network</i>	Primary care facilities (such as limited Barangay Health Stations and Rural Health Units) and hospitals are not integrated. Hence, referral systems are not institutionalized. RHUs are owned by local governments, hospitals are owned by provinces. Private facilities are not integrated in the public system)
<i>Strong primary care and community</i>	Only 50% of the population have timely access to a primary care facility (e.g., RHUs) (within 30 minutes). Only 40% of barangays have barangay health stations (BHS).
<i>Availability of health workers</i>	About 10% of primary care facilities (e.g. RHU) in the country do not have medical doctors; limited community health workers

<i>Availability of qualified workforce</i>	<i>of health</i>	Quality of nutrition and health interventions are not measured, but an indication of poor quality of health and nutrition services (e.g. nutrition advice during prenatal care not provided). Disease or intervention-specific; not holistic.
--	------------------	--

- **Health governance.** Health governance identifies the roles, accountabilities, and capacities of government agencies mandated to provide health and nutrition services. In health and nutrition, clear delineation of roles is critical not only for accountability but because it has implications on the effectiveness of financing and delivery sub-systems. The health system should clearly identify the specific roles of agencies - which agency should set technical standards, finance, and deliver health and nutrition services. Agencies that provide or set technical standards (e.g., Department of Health (DOH), National Nutrition Council (NNC), Population Commission (POPCOM)) should not deliver or finance health and nutrition services instead, they have technical capacity and skills to fulfill their set mandates. The roles and capacity of delivery (e.g., Local Government Units, private sector) and financing units (e.g., PhilHealth) must be clear and robust. **Table 6** outlines the prerequisites versus challenges in governance of nutrition and health interventions.

Table 6. Challenges in health governance

Prerequisite	Challenge
<i>Clear roles, capacities, and accountabilities of agencies to implement the expected health and nutrition function.</i>	DOH, NNC, and POPCOM: These agencies still finance, deliver health and nutrition services in local governments, but capacity to do these functions are limited. These services are most of the time overlapping. The technical skills of these agencies to deliver standards should be re-evaluated. Local Government Units: variable capacity to deliver or finance health and nutrition services. PhilHealth: limited capacity to finance comprehensive packages.

IV. Moving forward

The problem of chronic malnutrition in the Philippines is a human development disaster, which needs critical and urgent attention. Its economic and health consequences are just too enormous and extreme. Hence, addressing chronic malnutrition should be at the front and center of economic and health dialogues. Many have attempted to examine chronic malnutrition and put forward recommendations, but only a few have examined the problem using a health system lens. Our recommendations therefore are anchored on strengthening the health system and delivering critical health and nutrition interventions.

In the long-term, the provision of health and nutrition interventions must be aligned with the envisioned health system under the UHC law:

- PhilHealth should be the main source of financing of health and nutrition interventions.** It should cover a comprehensive set of health and nutrition services, including outpatient and inpatient services. Allowing the country's national insurance (PhilHealth) to be the primary source of financing will improve its

strategic purchasing to demand and pay for comprehensive, continuous, and converged health and nutrition services.

- ii. **The country should shift to a more primary care and integrated health system.** The UHC Act envisions the creation of a healthcare provider network (HPCN) at the province-level. HPCNs could be an ecosystem of private and public primary care facilities (e.g., Rural Health Units and Barangay Health Stations) and hospitals providing different types and levels of care. An integrated healthcare system will strengthen the continuity and convergence of health and nutrition interventions.
- iii. **The roles of the Department of Health (DOH) will be limited to standard-setting of health and nutrition interventions, health promotions (e.g., population-based demand generation activities such as mass media and community campaigns), and addressing governance and market failures in local health systems.** These include (1) provision of matching grants and incentives to facilitate the performance of selected local governments, (2) understanding the needs of all local governments then empower them by providing a package of assistance (2) bulk procurement of health and nutrition commodities with clear market failure (e.g., certain drugs or child vaccines).

What are the needed actions?

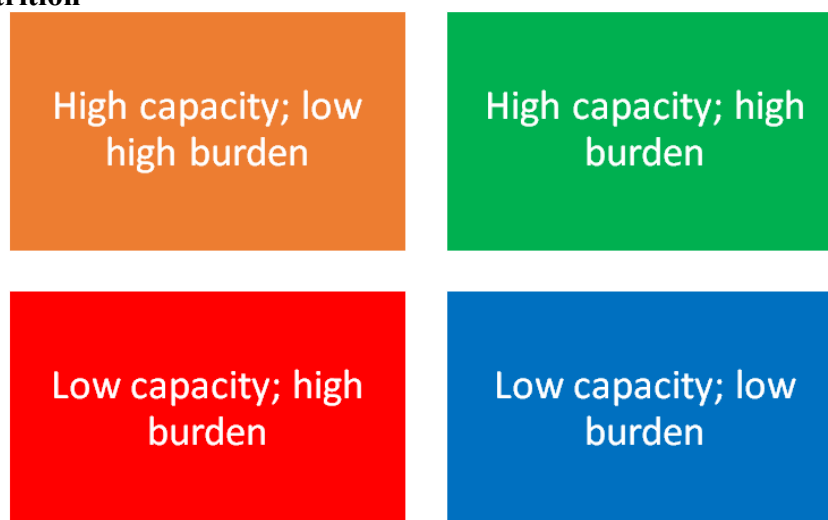
- i. Accelerate the implementation of the UHC Act, particularly the expansion of a well-costed outpatient benefit package - *Konsulta*, which includes a wide-range of health and nutrition interventions. Because of the potential increase in benefit payout as a result of the benefit expansion, the DOH and PhilHealth need to mobilize resources through realignment of health budget or premium increases.
- ii. Operationalize the possibility for PhilHealth to pay network of facilities instead of reimbursing individual hospitals or facilities to facilitate referral systems and continuous delivery of health and nutrition interventions. This vision is included in the UHC Act (i.e., special health fund at the province-level).
- iii. Use PhilHealth to pay and incentivize quality and uptake of nutrition and services (e.g., fee for service for child vaccination, iron supplementation, and ante-natal care visits).
- iv. Accelerate the rationalization of DOH, NNC, POPCOM and PhilHealth functions. This includes reducing the delivery and financing activities of DOH such as a direct provision of drugs and commodities (e.g. iron and vitamin A supplements) which should be shifted as a PhilHealth function unless there is a clear monopoly. Also, NNC and POPCOM should focus on their mandates, which are limited to standard and direction settings not delivery or financing of small-scale episodic delivery of health and nutrition services.

The recommendations are health system strengthening strategies that are medium and long-term in nature. Given the urgency of the chronic malnutrition, **the following recommendation could be adapted in the short-term:**

- i. The government must prioritize its current resources by classifying provinces and HUCs based on capacity and burden of chronic malnutrition (See **Figure 10**). Capacity

could be measured using various socio-economic indicators such as poverty incidence, public spending per capita and among others; burden is based on the level of chronic malnutrition.

Figure 10. Classification of provinces and HUCs based on capacity and burden of malnutrition



- ii. Given the variability of performance and capacity of local government units (LGUs), the national government must provide the type of grants depending on the quadrant. In areas with high burden and low capacity (red), the government must provide a comprehensive package of health and nutrition interventions. Currently, the DOH provides wide-range of grants to local governments for capital health infrastructure grants (e.g., Health Facility Enhancement Program), health human resources (e.g., doctors to the barrios), training, and drugs and commodities. However, these grants are not typically given as a package or rather incomplete. To provide a comprehensive package including the resources needed to deliver health and nutrition services in 3C fashion, the Department of Health (DOH) should start converging all of its existing grants and deliver them to local governments. In areas with high capacity areas and high burden, the national government could provide matching grants and other incentives for LGUs to tap their own resources.
- iii. In low capacity or fragile areas, the government must explore tapping non-profit private entities to deliver the entire package of health and nutrition interventions for a given period of time (e.g., Afghanistan's essential health benefit package model). However, this needs to be examined if this model (i.e., publicly financed; privately delivered) is indeed feasible given the local context.

V. Bibliography

- Addo OY, Stein AD, Fall CH, Gigante DP, Guntupalli AM, Horta BL, Kuzawa CW, Lee N, Norris SA, Prabhakaran P, Richter LM, Sachdev HS, Martorell R. Consortium on Health Orientated Research in Transitional Societies (COHORTS) Group. 2013. Maternal height and child growth patterns. *J Pediatr*. 2013;**163**(2):549–554.
- Beal, T., Le, D. T., Trinh, T. H., Burra, D. D., Huynh, T., Duong, T. T., Truong, T. M., Nguyen, D. S., Nguyen, K. T., de Haan, S., & Jones, A. D. 2019. Child stunting is associated with child, maternal, and environmental factors in Vietnam. *Maternal & child nutrition*, 15(4), e12826.
- Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*. 2013;382:452–77.
- CDC. 2020. Disease threats and global wash killers. Global Water, Sanitation, & Hygiene (WASH) <https://www.cdc.gov/healthywater/global/WASH.html> (accessed on July 2021)
- Dewey, K.G. and Mayers, D.R. 2011. Early child growth: how do nutrition and infection interact?. *Maternal & Child Nutrition*, 7: 129-142. <https://doi.org/10.1111/j.1740-8709.2011.00357.x>
- Echazú A, Bonanno D, Juarez M, Cajal SP, Heredia V, et al. 2015. Effect of poor access to water and sanitation as risk factors for soil-transmitted helminth infection: selectiveness by the infective route. *PLOS Neglected Tropical Diseases* 9(9): e0004111.
- Food and Nutrition Research Institute. 2015. Updating Survey of the Nutritional Status of Filipino Children and other Population Groups. Taguig City: Department of Science and Technology – Food and Nutrition Research Institute.
- Food and Nutrition Research Institute. 2018. Expanded National Nutrition Survey. Taguig City: Department of Science and Technology – Food and Nutrition Research Institute.
- Food and Nutrition Research Institute. 2019. Expanded National Nutrition Survey. Taguig City: Department of Science and Technology – Food and Nutrition Research Institute.
- Hambidge, K. Michael, K. Michael Hambidge, Manolo Mazariegos, Mark Kindem, Linda L. Wright, Christina Cristobal-Perez, Lucrecia Juárez-García, Jamie E. Westcott, Norman Goco, and Nancy F. Krebs. 2012. Infant stunting is associated with short maternal stature. *Journal of Pediatric Gastroenterology and Nutrition*.
- Hernández-Díaz, S., K. E. Peterson, S. Dixit, B. Hernández, S. Parra, S. Barquera, J. Sepúlveda, and J. A. Rivera. 1999. Association of maternal short stature with stunting in mexican children: common genes vs common environment. *European Journal of Clinical Nutrition*.
- Huang, X., Yang, B., Liu, Q. et al. 2020. Improving maternal and child nutrition in China: an analysis of nutrition policies and programs initiated during the 2000–2015 Millennium Development Goals era and implications for achieving the Sustainable Development Goals. *J Health Popul Nutr* 39, 12
- Huicho L, Vidal-Cárdenas E, Akseer N, Brar S, Conway Kaitlyn, Islam M, Juarez Elisa, Rappaport A, Tasic H, Vaivada T, Wigle J, Bhutta Z. 2020. Drivers of stunting reduction in Peru: a country case study, *The American Journal of Clinical Nutrition*, Volume 112, Issue Supplement_2, September 2020, Pages 816S–829S

- Hutton G, Chase C. 2017. Water supply, sanitation, and hygiene. In: Mock CN, Nugent R, Kobusingye O, et al., editors. *Injury Prevention and Environmental Health*. 3rd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017 Oct 27. Chapter 9.
- IFPRI n.d. Food Security <https://www.ifpri.org/topic/food-security> (accessed on July 2021)
- Keats E.C., Das J.K., Salam R.A., Lassi Z.S., Imdad A., Black R.E., Bhutta Z.A. 2021. Effective interventions to address maternal and child malnutrition: an update of the evidence. *The Lancet Child and Adolescent Health*, 5 (5) , pp. 367-384.
- Khan, S., Zaheer, S. & Safdar, N.F. 2019. Determinants of stunting, underweight and wasting among children < 5 years of age: evidence from 2012-2013 Pakistan demographic and health survey. *BMC Public Health* **19**, 358
- Khatun, Wajiha, Sabrina Rasheed, Ashraful Alam, Tanvir M. Huda, and Michael J. Dibley. 2019. Assessing the intergenerational linkage between short maternal stature and under-five stunting and wasting in Bangladesh. *Nutrients*.
- Martorell R., Flores R., Hickey M. 2002. "Stunting in Guatemala: Analyses of Change Over 15 Years." Department of International Health, Rollins School of Public Health, Emory University; Atlanta, GA, USA:Pp. 1–89.
- Mbuya M., Chideme M., Chasekwa B., Mishra V. 2010. "Biological, Social, and Environmental Determinants of Low Birth Weight and Stunting among Infants and Young Children in Zimbabwe." ICF Macro; Calverton, MD,
- NCD Risk Factor Collaboration. 2019. Global data on height over time. <https://ncdrisc.org/data-downloads-height.html> (accessed on July 2021)
- Özaltin, Emre. 2010. Association of maternal stature with offspring mortality, underweight, and stunting in low- to middle-income countries. *JAMA*.
- Philippine Statistics Authority. 2020. Gross Domestic Product. Macroeconomic Accounts. Manila, Philippines: Philippine Statistics Authority www.psa.gov.ph
- Scherpbier, Robert. (2016). China's Progress and Challenges in Improving Child Nutrition. Biomedical and environmental sciences: BES. 29. 163-164. 10.3967/bes2016.020.
- Scott, N., Delport, D., Hainsworth, S. et al. 2020. Ending malnutrition in all its forms requires scaling up proven nutrition interventions and much more: a 129-country analysis. *BMC Med* 18, 356
- Stephensen CB. 1999. Burden of infection on growth failure. *J Nutr*. 1999 Feb;129(2S Suppl):534S-538S. doi: 10.1093/jn/129.2.534S. PMID: 10064326.
- Stockman, J. A. 2012. Association of maternal stature with offspring mortality, underweight, and stunting in low- to middle-income countries. *Yearbook of Pediatrics*.
- The World Bank. Success stories with reducing stunting: lessons for PNG. <https://documents1.worldbank.org/curated/en/809771561531103886/pdf/Success-Stories-with-Reducing-Stunting-Lessons-for-PNG.pdf> (accessed on July 2021)
- Ulep, V., Uy, J., Casas, L. 2020. Primary health care for non-communicable diseases in the Philippines. Philippine Institute for Development Studies Discussion Paper Series No. 2020-39. Quezon City, Philippines.
- UNICEF/WHO/World Bank. (2021). *Joint child malnutrition estimates, March 2021 edition*. UNICEF/WHO/World Bank.

- Van Minh, H., Mai, V. Q., Anh, T. T., Duyen, N. T., Tuyen, L. D., Mai, T. T., Phuong, H. N., Mustafa, T. S., Nwaigwe, F., & Phuong, D. H. 2019. The cost of implementing Vietnam's national plan of action for nutrition for 2017-2020. *AIMS public health*, 6(3), 276–290.
- WHO. 2009. The importance of infant and young child feeding and recommended practices. *Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals*. Geneva: World Health Organization. <https://www.ncbi.nlm.nih.gov/books/NBK148967/> (accessed on July 2021)
- World Bank n.d., World Development Indicators. www.databank.worldbank.org (accessed July 2021)

Appendices

Appendix A. List of nutrition specific interventions

Domain	Interventions
1. Micronutrient supplementation	<ul style="list-style-type: none"> • Vitamin A, iron, folic acid, zinc • Multiple micronutrient powder
Infant and Young Child Feeding	<ul style="list-style-type: none"> • Breastfeeding, appropriate complementary feeding • Dietary diversification in young children
3. Integrated Management of Acute Malnutrition	<ul style="list-style-type: none"> • Therapeutic foods (e.g. RUTF and RUSF) provision • Enhancement of facilities for provision of PIMAM services
4. Supplementary feeding	<ul style="list-style-type: none"> • For 6-23 months, 24-59 months, school children • Food plants for producing supplementary foods
5. Mandatory Food Fortification	<ul style="list-style-type: none"> • Iodine in salt, Iron in rice, Iron and vitamin A in flour, vitamin A in cooking oil or sugar • Technology development, regulation and monitoring, promotion
6. Nutrition interventions in emergencies	<ul style="list-style-type: none"> • Capacity building for mainstreaming nutrition in emergencies • Intervention package for malnutrition and support for IYCF
7. Overweight/Obesity Management and Prevention	<ul style="list-style-type: none"> • Weight management interventions • Promotion of healthy lifestyle (e.g. childhood obesity) • Healthy food environment
8. Nutrition Promotion for Behavior Change	<ul style="list-style-type: none"> • Mass and social media campaigns, events and fora • Community-based nutrition programs

Source: Developed using frameworks from the Philippine Plan of Action for Nutrition 2017-2022 and Bhutta et al. 2013

Appendix B. List of nutrition sensitive interventions

Domain	Interventions
1. Maternal and neonatal health	<ul style="list-style-type: none"> • Antenatal care, facility-based delivery, postnatal care • Essential Intrapartum and Newborn care (EINC)
2. Disease prevention and management	<ul style="list-style-type: none"> • Expanded Program On Immunization • Integrated management of childhood illnesses (IMCI) - malaria, diarrhea, acute respiratory infections, measles, helminthiases
3. Family Planning and Responsible Parenting	<ul style="list-style-type: none"> • Provision of FP commodities (short-acting and long-acting) • Counselling, information, community-based demand generation
4. Women's Empowerment and child protection	<ul style="list-style-type: none"> • Maternal education, maternity protection in the workplace • Reduced gender discrimination • Violence against women and children
5. Early Childhood Care and Development (ECCD)	<ul style="list-style-type: none"> • Responsive caregiving - training parents and caregivers • Early childhood education and learning (0 to 3 years)
6. Oral health	<ul style="list-style-type: none"> • Oral examination, prophylaxis, hygiene education
7. Water and Sanitation (Environment)	<ul style="list-style-type: none"> • Access to safe and improved drinking water and sanitation • Handwashing and food safety
8. Social safety nets	<ul style="list-style-type: none"> • Transfers of cash, food, or in-kind (conditional or unconditional) • Poverty reduction, livelihood Programs
9. Agriculture (food security and availability)	<ul style="list-style-type: none"> • Increased food production (e.g. seed buffer stocking) • Community mechanization, equipment, and facilities • Availability, access, and use of local foods for women/children

Source: Developed using frameworks from the Philippine Plan of Action for Nutrition 2017-2022 and Bhutta et al. 2013