Jeffrey Cheah Institute on Southeast Asia

Jeffrey Sachs Center on Sustainable Development
Sunway University, Malaysia

STUNTING IN MALAYSIA: COSTS, CAUSES & COURSES FOR ACTION

Derek Kok

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STUNTING IN MALAYSIA: Costs, Causes and Courses for Action

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EXECUTIVE SUMMARY

- Stunting is the inability of children to reach their potential height for their age. However, stunting is about more than height – it is the most common measurement used to identify chronic malnutrition in children.
- Stunting can adversely affect the health, education, and productivity outcomes of children. It has potentially serious social and economic costs for the overall development of the country.
- Stunting in Malaysia is high, and cuts across ethnicities, income levels, occupations, education levels, states and even the urban-rural divide. At 20.7%, Malaysia's stunting prevalence is far worse than West Bank & Gaza (7.4%) and comparable to Iraq's stunting rate (22.6%) at the end of the American invasion in 2011.
- Gaps exist when it comes to the mother and child's access to the underlying determinants of stunting in Malaysia.

  i) Household food security
  - 12% of children living in low-cost flats have less than three meals a day. 97% of these households say that high food prices prevent them from preparing healthy meals for their children, while 1 in 2 do not have enough money to buy food in recent months with 15% experiencing this frequently (UNICEF 2018).

  ii) Care and feeding practices
  - Nutrient requirements for women are not being met. In 2016, 24.9% of Malaysian women of reproductive age suffer from anaemia, while the prevalence of anaemia in pregnant women is 37.1%.
  - Malaysian children are simply not receiving adequate and appropriate complementary food (NHMS 2016). 19.2% of Malaysian children aged 6-23 months do not achieve the prescribed minimum meal frequency of two meals a day, while 33.6% of Malaysian children do not consume at least four food groups daily.
  - There exists a larger pattern of inadequate and inappropriate eating habits within the family, rooted in poor health literacy. Only 6.6% of Malaysians adults possess adequate health literacy (NHMS 2015).

  iii) Access to health services
  - Only 69.1% of women were booked for antenatal visits in the first trimester, which is a key period for early risk identification (NHMS 2016).
  - Regular height or length monitoring of children is crucial but is not always carried out, and is not stressed enough in Malaysian nurses' training.
  - Only two government initiatives at present address children in the critical 1,000-day period, but both do not address stunting.

  iv) Access to a healthy environment
  - While Malaysia has impressive overall performance in terms of access to water and sanitation services, gaps still exist, particularly in Orang Asli communities.
  - Existing initiatives are simply not multidimensional in practice and do not address the environmental causes of stunting.

- Policy interventions must be driven by these principles: they must address the underlying causes of stunting; be multi-sectoral in approach; and focus on the critical 1,000-day window.
- Recommendations:
  i) Make addressing stunting a national priority by establishing high-level political mechanisms to drive initiatives;
  ii) Introduce an unconditional cash transfer scheme covering the 1,000-day window; and
  iii) Launch mass communications and public awareness campaigns on stunting and malnutrition.

STUNTING IN MALAYSIA: COSTS, CAUSES & COURSES FOR ACTION

Introduction

Childhood stunting has recently garnered public attention in Malaysia, but there remains a general lack of understanding surrounding the issue.

Policymakers and the general public have mostly focused on the immediate causes of stunting, particularly on inadequate dietary intake, but have not paid as much attention to the underlying determinants of stunting.

This paper seeks to contribute to the knowledge gap by highlighting the causes and effects of stunting, identifying statistical and historical trends on stunting in Malaysia, and providing suggestions on addressing stunting among Malaysian children. Notably, this paper assesses Malaysia's performance in the underlying determinants of stunting which consist of: (i) household food security; (ii) adequate care and feeding practices; (iii) access to health services; and (iv) the presence of a healthy environment.

This paper uses a combination of publicly available data from the Institute of Public Health Malaysia and the Department of Statistics (DOS) Malaysia, engagements with subject matter experts and key stakeholders, and a literature review on childhood stunting.

What is stunting?

Stunting is the inability of children to reach their potential height for their age.

Studies have shown that **all children worldwide have the same potential to grow** during their first five years, regardless of their race or ethnic origin.

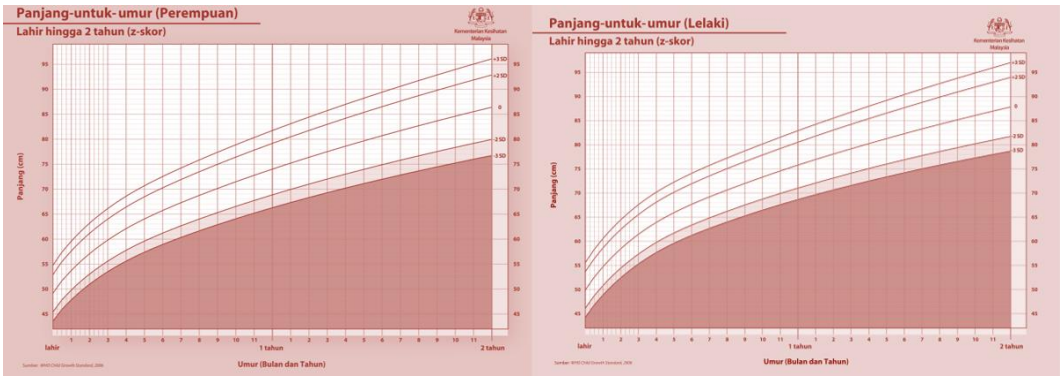

Figure 1: Malaysian child growth charts based on the WHO Child Growth Standards (Ministry of Health Malaysia 2016)

The 2006 WHO Multicentre Growth Reference Study, conducted over six years, discovered that average growth is strikingly similar around the world when conditions for growth are optimal.[1] The study found only about 3% variability in fetal growth, which suggests that when given this optimal environment, children from different genetic and cultural backgrounds are likely to grow on a similar trajectory until the age of 5 years.[2] Variability in the children's growth were observed to be caused by factors unrelated to genetics or ethnicity, and were more influenced by nutrition, environment, and healthcare differences.[3]

Children are defined as stunted if their height-for-age is more than 2 standard deviations below the WHO Child Growth Standards median, that was developed from the 2006 Reference Study.[4]

But stunting is about more than height - it is the most common measurement used **to identify chronic malnutrition in children**. Stunting reflects a child's nutritional deficiencies during the critical 1,000-day period covering pregnancy and the first two years of the child's life. It is during this period that a child's growth and brain development is at its most rapid and most sensitive to nutritional disruptions.[5]

Scientific evidence also increasingly shows that the foundations of a person's lifelong health are largely set during this 1,000-day window.[6] The effects of chronic malnutrition within this crucial window can exert devastating and almost irreversible consequences, both in the short and long run.

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[1] WHO Multicentre Growth Reference Study Group, *WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development* (World Health Organization 2006).
[2] WHO Multicentre Growth Reference Study Group, 'Assessment of differences in linear growth among populations in the WHO Multicentre Growth Reference Study' (2006) Acta Paediatrica Suppl. 450.
[3] Ibid.
[4] WHO, *Training course on child growth assessment* (World Health Organization 2008) <http://www.who.int/childgrowth/training/en/> accessed 10 February 2018.
[5] S Cusick and MK Georgieff, *The First 1,000 Days of Life: The Brain's Window of Opportunity* (UNICEF Office of Research-Innocenti) < https://www.unicef-irc.org/article/958-the-first-1000-days-of-life-the-brains-window-of-opportunity.html> accessed 15 February 2018.
[6] B Holt, N Kaviani, M Sheth, and M van Driel, 'Can Nurturing the Young Be the Key to Tackling Chronic Diseases in the Old? A Narrative Review with a Global Perspective' (2018) 18 The Ochsner Journal 364.

Implications of stunting

In the short-term, stunting can result in **increased risk of mortality and morbidity** from infections such as diarrhoea, which is a direct cause of chronic malnutrition.[7]

Infections decrease nutritional intake through reduced appetite, direct loss of nutrients in the gut and the diversion of nutrients away from growth towards immune response.[8] This increased susceptibility to infectious diseases can lead to **a vicious cycle of infection and malnutrition**.

In the longer term, stunting **heightens the risk of adult obesity**, which can lead to type-2 diabetes and cardiovascular disease.[9] Numerous studies have discovered the association between stunting in early childhood and obesity later in life.[10] Young children were reported to be both stunted and overweight in some populations.[11]

Additionally, research indicates that stunting in early childhood may increase the risk of **elevated blood pressure** in adulthood.[12]

Stunting also **impacts the education outcomes** of children:

- Stunted children are reported to be **less likely to enrol in school** or enrol late. In Guatemala, those who were stunted as children had less total schooling than non-stunted children.[13]
- A large body of research exists that shows a strong link between stunting and cognitive development. These studies indicate that stunted children usually display **delayed development of motor skills** such as crawling and walking, and exhibit diminished exploratory behaviour.[14]
- In a 2013 study of 8062 children in Ethiopia, India, Peru, and Vietnam, stunted children were found to have lower mathematics achievement, reading comprehension, and receptive vocabulary than children who were never stunted.[15]
- In Indonesia, adults who were stunted at childhood demonstrated **lower cognitive function** and tended to spend fewer years enrolled in formal education.[16]

The effects of stunting not only hamper stunted children's educational achievements but also their economic outcomes as adults:

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[7] RE Black, LH Allen, ZA Bhutta, L Caulfield, M de Onis, M Ezzati et al, 'Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences' (2008) 371 The Lancet 243.
[8] NW Solomons, 'Malnutrition and Infection: An Update' (2007) 98 British Journal of Nutrition 5.
[9] K Sahoo et al, 'Childhood Obesity: Causes and Consequences" (2015) 4 Journal of Family Medicine and Primary Care 187.
[10] AL Sawaya and S Roberts, 'Stunting and Future Risk of Obesity: Principal Physiological Mechanisms' (2003) 19 Cadernos de Saúde Pública 21.
[11] LC Fernald and LM Neufeld, 'Overweight with Concurrent Stunting in Very Young Children from Rural Mexico: Prevalence and Associated Factors' (2006) 61 Eur J Clin Nutr 623.
[12] PS Gaskin, SP Walker, TE Forrester and SM Grantham-McGregor, 'Early Linear Growth Retardation and Later Blood Pressure' (2000) 54 Eur J Clin Nutr 563.
[13] J Hoddinott, H Alderman, JR Behrman, L Haddad, and S Horton, 'The Economic Rationale for Investing in Stunting Reduction' (2013) 9 Matern Child Nutr 69.
[14] JL Brown and E Pollitt, 'Malnutrition, Poverty and Intellectual Development' (1996) 274 Scientific American 38.
[15] BT Crookston, W Schott, S Cueto et al, 'Postinfancy Growth, Schooling, and Cognitive Achievement: Young Lives' (2013) 98 Am J Clin Nutr 1555.
[16] J Giles, E Satriawan, F Witoelar, 'Early Childhood Nutrition, Availability of Health Service Providers and Life Outcomes as Young Adults: Evidence from Indonesia' (Surveymeter Working Paper, forthcoming).

- In the Philippines, researchers found an association between stunting with individuals' work status (either working, unemployed, or informal work).[17] The study found that stunting at childhood is linked with the **reduced likelihood of employment in the formal work sector** 20 years later. This association was even more pronounced among young males – higher length-for-age Z score (LAZ) at age 2 was linked with a 40% increase in the likelihood of formal work, which is commonly linked with greater job stability, regular hours, higher wages and employment benefits.

- Stunting can also lower the future income-earning ability of stunted children. It is estimated that adults who were stunted during their childhood **earn 20% less in their working life** compared to non-stunted individuals – each additional centimetre of adult height can be associated with an almost 5% increase in wage rates.[18]

Childhood stunting as such has potentially serious social and economic costs for the labour market and overall economic development of the country. A 2018 World Bank study by Galasso and Wagstaff sought to calculate how much lower a country's per capita income is today due to the effects of childhood stunting on its adult workers. It was shown that **countries lose, on average, 7% of per capita income** because of stunting.[19] The World Bank in its latest Economic Monitor for Malaysia had also explicitly identified child stunting as a 'significant constraint' on the country's human capital development and in turn, long-term productivity gains.[20]

The consequences of stunting can go beyond one lifetime and transcend future generations:

- Women who were themselves stunted as children, are at greater risk of bearing stunted children.[21] Using a large sample of 109 surveys in 54 low- to middle-income countries, researchers reported a significant decrease in the risk of stunting for every 1cm increase in maternal height.

- A study of 7630 mother-child pairs from Brazil, Guatemala, India, Philippines and South Africa found an association between maternal height and child linear growth, with short mothers (<150 cm) reported to be three times more likely to have a child who is stunted.[22]

As stunting is largely irreversible, **stunted girls grow up to become stunted adult women, who then give birth to stunted children** – repeating a vicious cycle of stunting and malnutrition.

[17] DB Carba, VL Tan and LS Adair, 'Early Childhood Length-For-Age Is Associated with The Work Status of Filipino Young Adults' (2009) 7 Economics and Human Biology 7.
[18] S Grantham-McGregor et al, 'Developmental Potential in The First 5 Years for Children in Developing Countries' (2007) 369 Lancet 60.
[19] E Galasso and A Wagstaff, 'The Aggregate Income Losses from Childhood Stunting and the Returns to a Nutrition Intervention Aimed at Reducing Stunting' (2018) World Bank Policy Research Working Paper 8536.
[20] World Bank Group, *Malaysia Economic Monitor, December 2018: Realizing Human Potential* (World Bank 2018) 74.
[21] RE Black, CG Victora, SP Walker, ZA Bhutta, P Christian, M de Onis et al, 'Maternal and Child Undernutrition and Overweight in Low Income and Middle-Income Countries' (2013) 382 Lancet 427.
[22] OY Addo, AD Stein, CH Fall, DP Gigante, AM Guntupalli, BL Horta et al, 'Maternal Height and Child Growth Patterns from Birth To Adulthood' (2013) 163 The Journal of Pediatrics 549.

STUNTING TRENDS IN MALAYSIA

The prevalence of stunting among Malaysian children under the age of five stands at 20.7%, according to the 2016 National Health and Morbidity Survey.[23] This figure is significantly higher than the overall 6.9% prevalence (latest 2016) in upper middle-income countries, which Malaysia is classified as.[24]

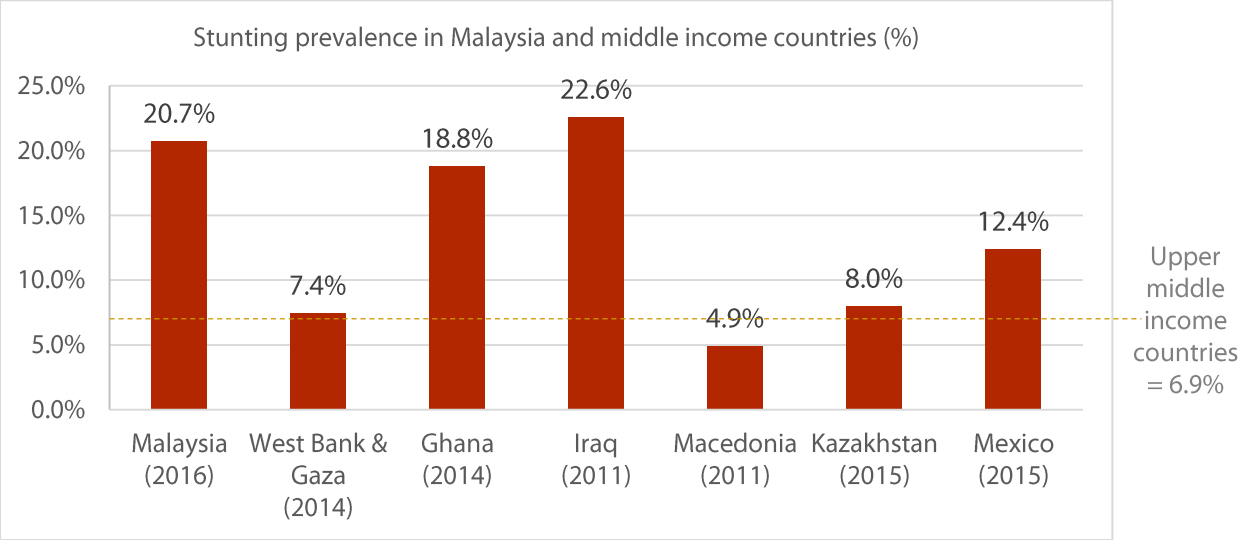


Figure 2: Stunting prevalence in Malaysia and middle income countries (World Bank 2018)

Malaysia's stunting rate is higher than some lower middle-income and low-income countries such as Ghana and Senegal.[25] In fact, **Malaysia's stunting prevalence is far worse than West Bank & Gaza** (7.4%) and comparable to Iraq's stunting rate (22.6%) at the end of the American invasion in 2011.[26]

[23] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 156.
[24] World Bank, *World Development Indicators* < http://datatopics.worldbank.org/world-development-indicators/> accessed 15 January 2018.
[25] Ibid.
[26] Ibid.

The stunting rate in Malaysia has actually **worsened to its 1999 level**, even as the global level of stunting has fallen steadily in the same time. In fact, Malaysia's current rate of 20.7% far exceeds the target of 11.0% to be achieved by the year 2025 under the National Plan of Action for Nutrition of Malaysia 2016-2025.[27]

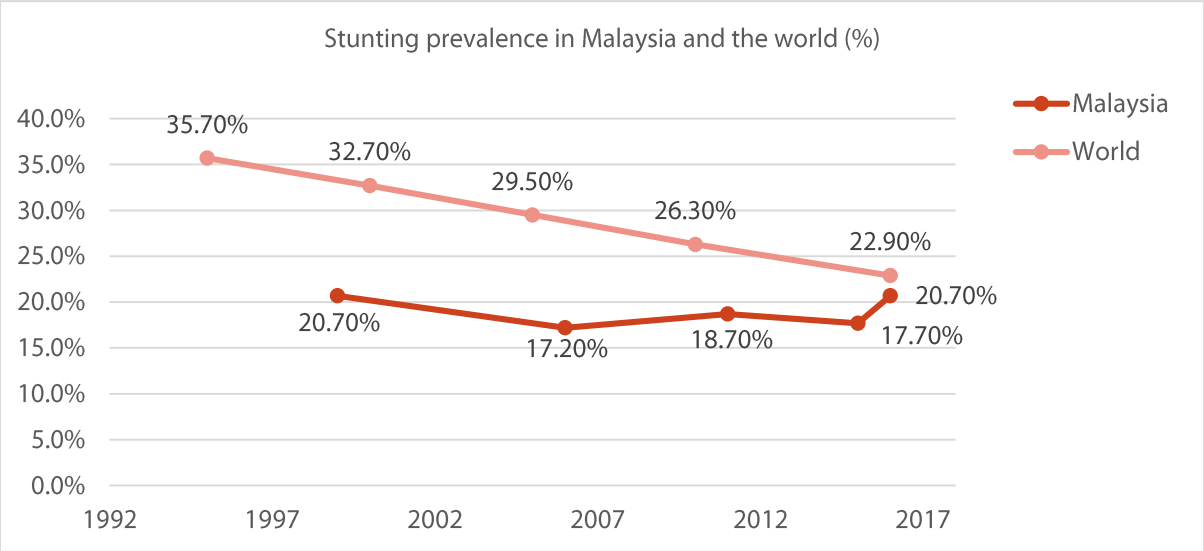


Figure 3: Stunting prevalence in Malaysia and the world (World Bank 2018)

While stunting is worse in poorer households, it is **broadly prevalent across all income groups**. The 17.4% prevalence of stunting in households with income greater than RM 5,000 is still high, compared to the 6.9% benchmark of upper middle-income countries.

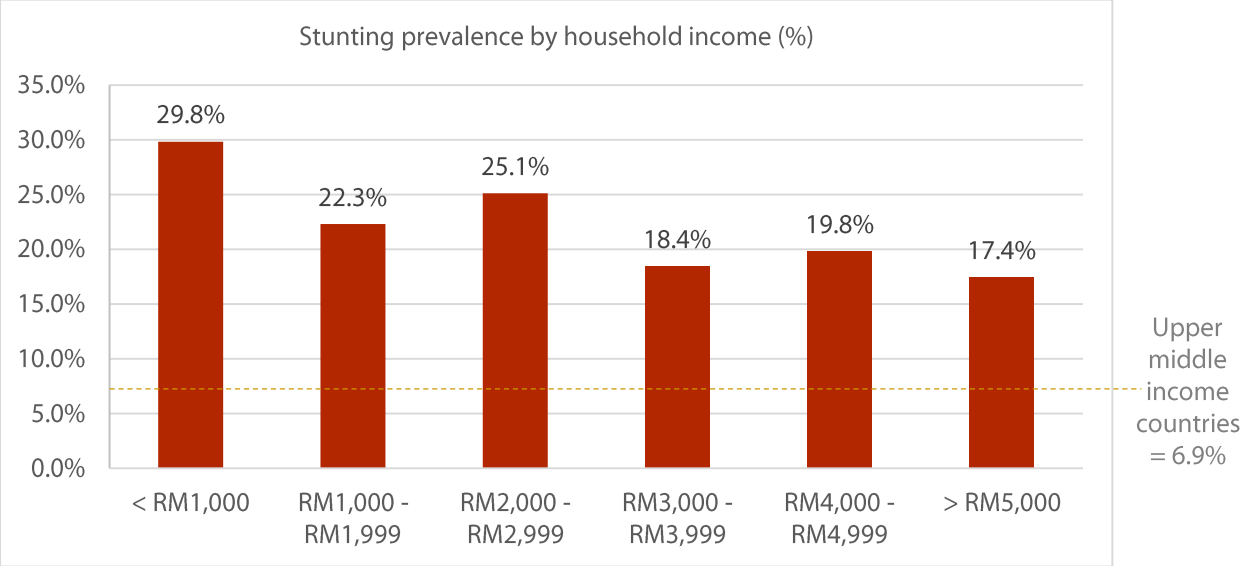


Figure 4: Stunting prevalence by household income in Malaysia (NHMS 2016)

[27] Ministry of Health Malaysia, *National Plan of Action for Nutrition of Malaysia III, 2016-2025* (National Coordinating Committee on Food & Nutrition 2016) 48.

A similar trend can be seen when the data is disaggregated according to states – **all states record a stunting prevalence above 6.9%**. For example, the country's poorest state, Kelantan, unsurprisingly records the highest prevalence of stunting, significantly higher than Malaysia's national prevalence of 20.7%. However, Putrajaya has the fourth highest stunting prevalence despite being the second richest state in the country by median income. There is also not much distinction between the stunting rate in urban (19.23%) and rural (23.24%) areas.[28]

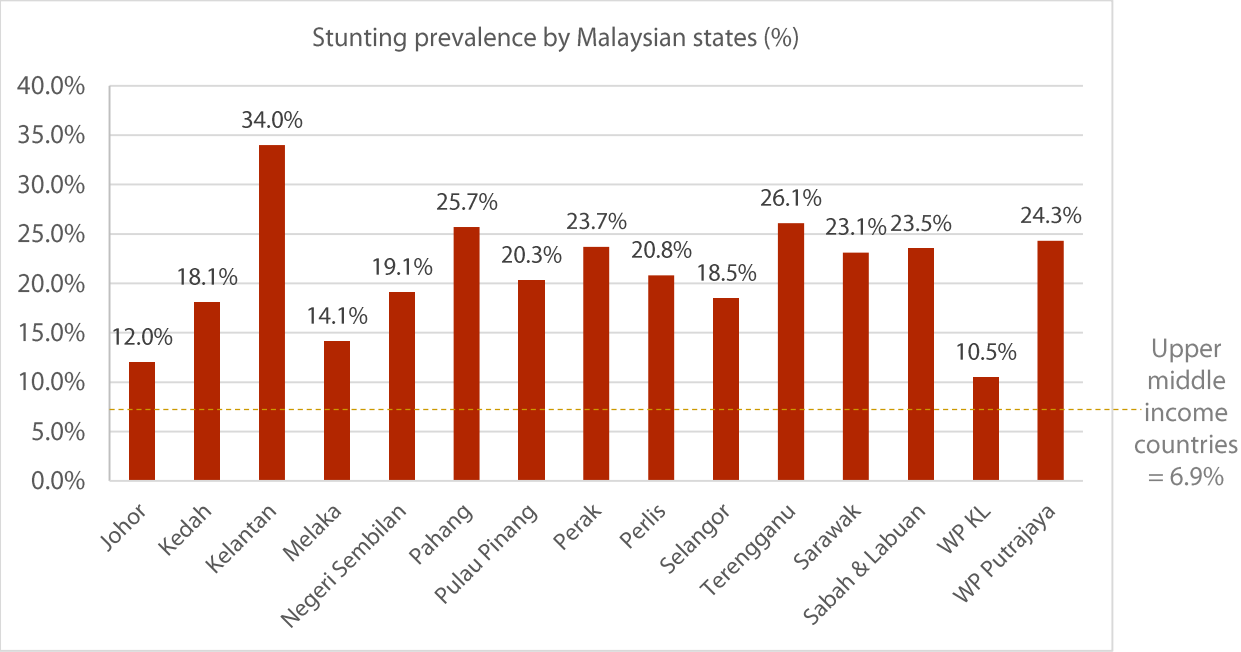


Figure 5: Stunting prevalence by Malaysia states (NHMS 2016)

Stunting is generally **high across all ethnicities**, easily surpassing the 6.9% benchmark.

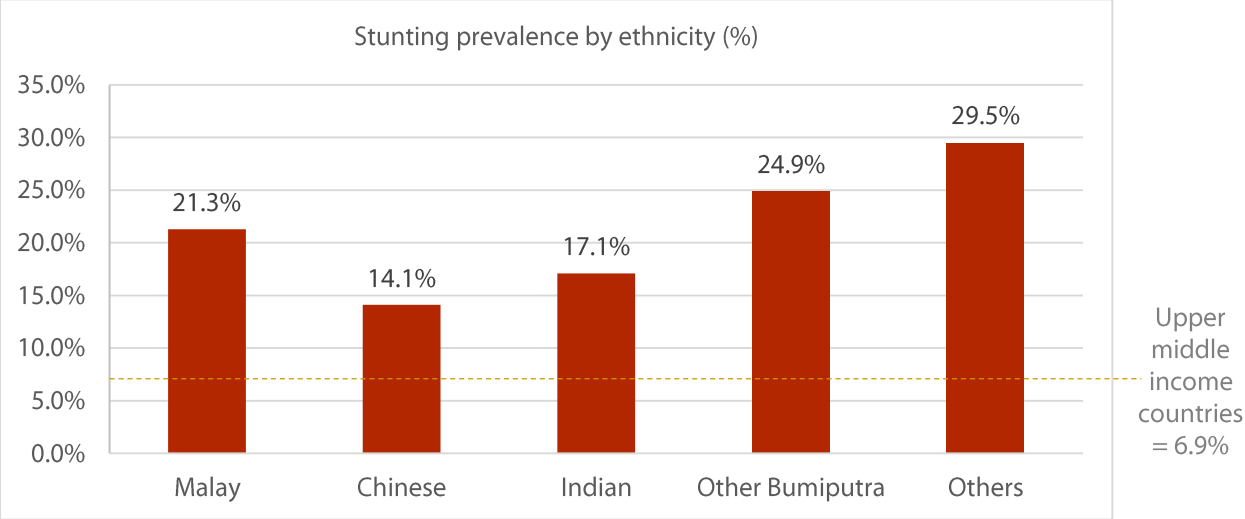


Figure 6: Stunting prevalence by ethnicity of child (NHMS 2016)

[28] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 156.

While stunting rates fall as maternal education improves, a high rate of stunting is present even among children with mothers who possess a higher education qualification.

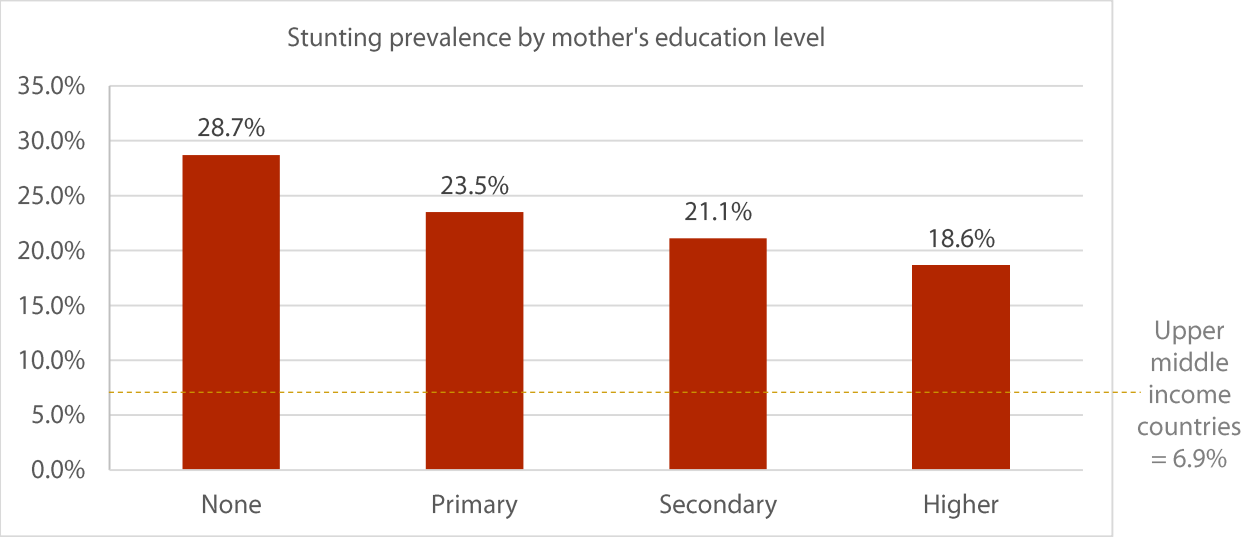


Figure 7: Stunting prevalence by mother's education level (NHMS 2016)

The prevalence of stunting is highest when the mother is unemployed, but once again is **high across all occupations**.

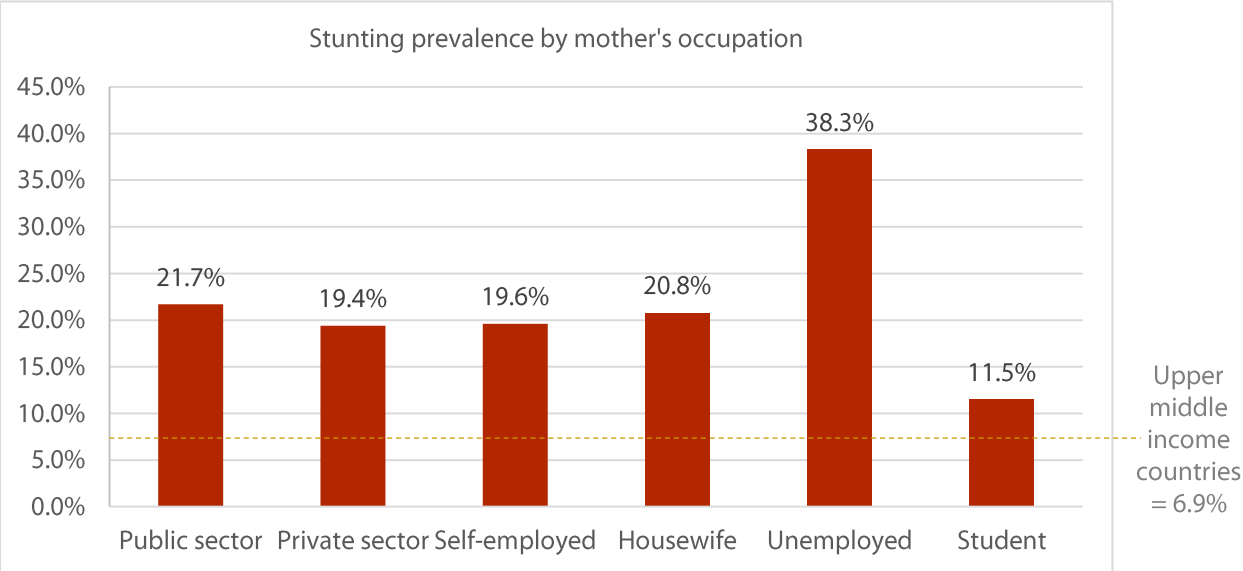


Figure 8: Stunting prevalence by mother's occupation (NHMS 2016)

From the data, it is clear to see that **stunting in Malaysia cuts across ethnicities, income levels, occupations, education levels, states and even the urban-rural divide**. The conclusion that these figures show cannot be ignored – Malaysia has a national malnutrition problem.

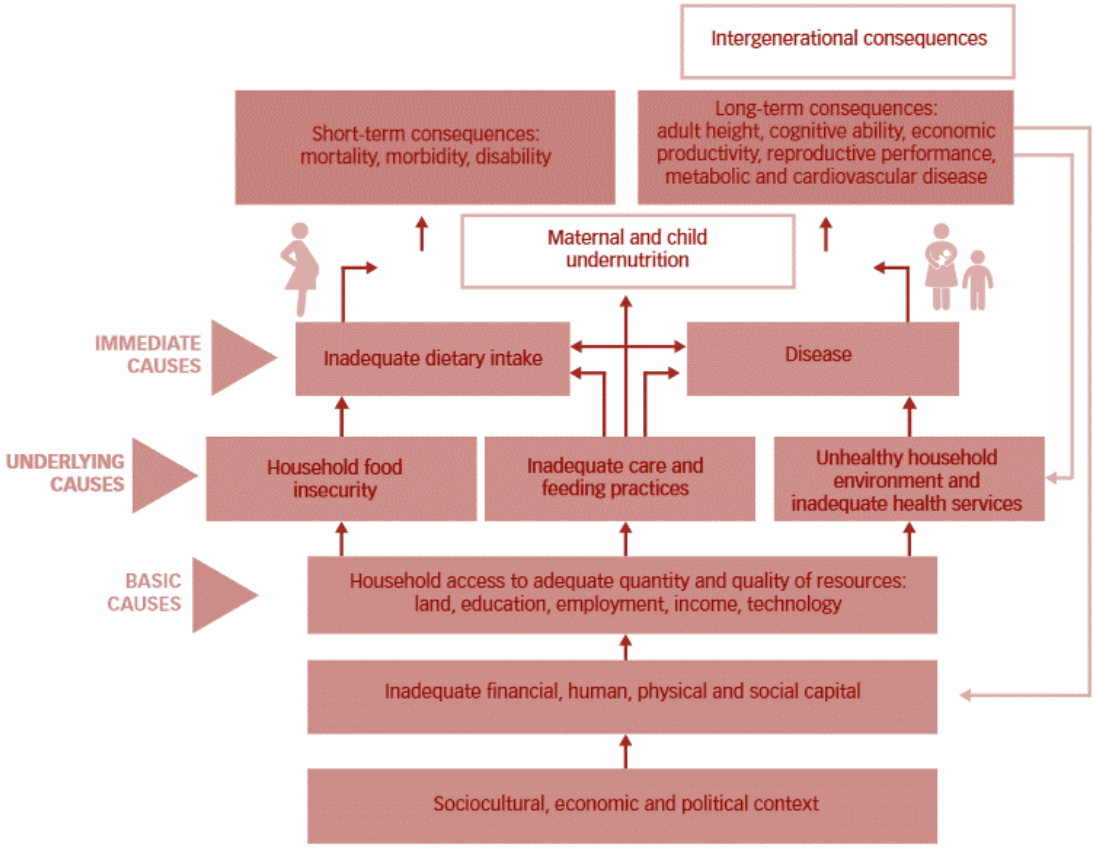
UNDERESTIMATING THE ISSUE?

In fact, chronic malnutrition in Malaysia may be more serious than it appears. The classification of stunting, as per the WHO Child Growth Standards definition, does not mean that there are two distinct populations where one is stunted and the other grows healthily.[29] Instead, there is a gradation of growth faltering. The risk and consequences of stunting do not disappear simply by crossing the cut-off line. The measurement of stunting prevalence may therefore underestimate the issue of suboptimal growth and malnutrition.[30]

[29] M De Onis and F Branca, 'Childhood Stunting: A Global Perspective' (2016) 12 Maternal & Child Nutrition 12, 13.
[30] N Perumal, DG Bassani, and DE Roth, 'Use and Misuse of Stunting as a Measure of Child Health' (2018) 148 The Journal of Nutrition 311.

DRIVERS OF STUNTING IN MALAYSIA

There is no single cause to stunting. Instead, stunting, as a manifestation of maternal and child undernutrition, results from **a complex interaction of household, environmental, socioeconomic and cultural influences**. These different influences are captured in the UNICEF Conceptual Framework for Undernutrition.[31]



The thin arrows show that the consequences of undernutrition can feed back to the underlying and basic causes of undernutrition, perpetuating the cycle of undernutrition, poverty and inequities.

Figure 9: Conceptual framework for undernutrition (UNICEF 2013)

[31] UNICEF, *Improving Child Nutrition: The Achievable Imperative for Global Progress* (UNICEF 2013)

The above framework illustrates that maternal and child nutrition are inextricably linked and caused by similar factors. This framework shows how broader systemic issues interact with challenges at the community, household and individual levels to impact malnutrition.[32]

The immediate determinants of optimal growth are influenced by underlying food security, caregiving practices, and environmental conditions, which are in turn shaped by systemic-level factors which determine how resources are distributed and accessed.[33]

The framework also highlights how consequences of undernutrition can feed back to the underlying and basic causes of undernutrition – perpetuating a vicious cycle of undernutrition, poverty, and inequality.

It is especially crucial for there to be adequate access to the underlying causes: household food security, adequate care and feeding practices, access to health services, and the presence of a healthy environment.[34]

1. Household food security

A study conducted in Kelantan discovered that **children in food-insecure households were three times more likely to be stunted** than children in food-secure households.[35]

Food security is when there exists at all times physical, social and economic access to sufficient, safe and nutritious food that meet dietary needs and food preferences for an active and healthy life.[36] In other terms, food security concerns the availability, accessibility, affordability and utilisation of food. Food insecurity can occur either in singular, cyclical or prolonged periods.

Aside from the direct impact of food insecurity on the child's nutritional intake, a study has showed that household food insecurity increases the prevalence of diarrhoea which, as explained above, can directly cause stunting.[37]

In 2014, Khazanah Research Institute found that **many Malaysians are unable to afford a nutritionally adequate diet**, especially for households with incomes near the poverty line and living in urban areas.[38] It also calculated that on average, households in Malaysia spent only 17.7% of their monthly expenditure on food at home – a nutritious diet would have ranged between 25.7% and 39.2% of median monthly household expenditure.[39]

A 2001 study by Zalilah and Ang found that 65.7% of low-income households in Kuala Lumpur experienced some kind of food insecurity, with 27.0% falling into the child hunger category.[40]

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[32] K Reinhardt and J Fanzo, 'Addressing Chronic Malnutrition through Multi-Sectoral, Sustainable Approaches: A Review of the Causes and Consequences' (2014) 1 Frontiers in Nutrition 1, 2-3.
[33] Ibid.
[34] C Rokx, AW Subandoro, P Gallagher, *Aiming High: Indonesia's Ambition to Reduce Stunting* (World Bank 2018) 23.
[35] IA Naser et al, 'Association Between Household Food Insecurity and Nutritional Outcomes Among Children in Northeastern of Peninsular Malaysia" (2014) 8 Nutrition Research and Practice 304.
[36] Food and Agriculture Organization of the United Nations, *Trade Reforms and Food Security: Conceptualizing the Linkages* (FAO 2003) 313.
[37] M Hackett, H Melgar-Quiñonez, MC Álvarez, 'Household Food Insecurity Associated with Stunting and Underweight Among Preschool Children in Antioquia, Colombia' (2009) 25 Rev Panam Salud Pública 506.
[38] Khazanah Research Institute, *The State of Households II* (Khazanah Research Institute 2014) 48.
[39] Ibid, 49-50.
[40] ZM Sharif and M Ang, 'Assessment of Food Insecurity Among Low Income Households in Kuala Lumpur Using the Radimer/Cornell Food Insecurity Instrument - A Validation Study' (2001) 7 Malaysian Journal of Nutrition 15.

UNICEF Malaysia's 'Children Without' report described similar findings.[41] 12% of children living in low-cost flats have less than three meals a day. 97% of these households say that high food prices prevent them from preparing healthy meals for their children, while 1 in 2 do not have enough money to buy food in recent months with 15% experiencing this frequently.

In Malaysia, food constitutes a large proportion of household expenditure. In 2014, 94.6% of all households spent more on food than on any other expenditure items.[42]

This means that Malaysian households are particularly sensitive to food price rises. In fact, Malaysia's food price inflation is higher than overall inflation: food price inflation was 3.6% on average while overall inflation was 2.4% between 2011 and 2015.[43]

To exacerbate the situation, the income remaining for households earning below RM2,000 was only RM76 in 2016.[44] This means that **these households are at a very real risk of facing food insecurity** in the event of any economic shocks such as the simple matter of an unexpected price rise.

Khazanah Research Institute's findings illustrate this – although overall expenditure on food at home increased for lower income households between 2014-2016, the quantity of food consumed in these households, both at and outside home, actually fell.[45]

2. Care and feeding practices

Inadequate care and feeding practices for both the mother and child can significantly affect stunting and malnutrition.

i. Maternal nutrition

Women's nutrient requirements are high during pregnancy and lactation because of the need to support fetal growth and produce breast milk. **Maternal micronutrient deficiencies are linked with adverse birth outcomes** – the WHO estimates that maternal undernutrition accounts for 20% of childhood stunting.[46]

The status of undernutrition among Malaysian mothers is not clear due to a lack of data, but low birth weight and maternal anaemia could provide an indication.

The birth weight of a child is the direct result of the mother's health and nutritional status before and during the pregnancy. 9.7% of Malaysian children below 5 years are of low birth weight – in contrast, the prevalence of low birth weight in upper middle income countries is 5.7%, while the worldwide prevalence is 10.5%.[47] Malaysia's prevalence of low birth weight has not changed significantly since 2007 (10.5%) and 1998 (9.6%).[48]

A high number of women in Malaysia enter the pregnancy already anaemic. In 2016, 24.9% of Malaysian women of reproductive age suffer from anaemia.[49] Meanwhile, the prevalence of

[41] UNICEF Malaysia, *Children Without: A Study of Urban Poverty and Deprivation in Low-cost Flats in Kuala Lumpur* (UNICEF 2018).
[42] Khazanah Research Institute (n 37) 48.
[43] Ibid, 51.
[44] Khazanah Research Institute, The State of Households 2018: Different Realities (Khazanah Research Institute 2018) 34.
[45] Ibid, 37.
[46] RE Black, CG Victora, SP Walker, ZA Bhutta, P Christian, M de Onis et al (n 21).
[47] World Bank, World Development Indicators <http://datatopics.worldbank.org/world-development-indicators/> accessed 15 January 2018.
[48] Ibid.
[49] WHO Global Health Observatory Data Repository <http://apps.who.int/gho/data/node.main.ANEMIA1?lang=en> accessed 15 January 2018.

anaemia in pregnant women is 37.1%, which constitutes a moderate public health problem.[50] Iron deficiency is thought to be the most common cause of anaemia. Iron deficiency anaemia before and during early pregnancy results in significant decrements in fetal growth.[51] The main cause for iron deficiency in Malaysia is iron loss arising from depletion during pregnancy and bleeding at delivery.[52] Furthermore, the **dietary iron intake of young Malaysian women is inadequate**. A higher iron intake from foods of animal origin will have a positive improvement on iron deficiency anaemia, but only 25% of Malaysian women's dietary iron intake are of animal origin.[53]

A comprehensive examination of Malaysian women's diet has not been undertaken, but smaller studies indicate that **nutrient requirements are not being met** especially for pregnant women. According to a 2015 report, young Malaysian women receive only 10 mg/day in iron, which is significantly lower than the recommended intake of 20-29 mg/day.[54] Aside from iron intake, a study of pregnant women in Kuantan, Pahang found that their daily diet was insufficient to meet the recommended daily intake for total energy and other nutrients such as folic acid, vitamin D, and calcium.[55]

ii. Child nutrition

Studies increasingly underscore the important role of breastfeeding and complementary feeding as major factors for child growth and in particular, to reduce stunting. The universally recommended infant and young child feeding practices for the critical 1,000-day window for nutrition prescribes exclusive breastfeeding for the first 6 months; followed by continued breastfeeding up to two years or beyond together with adequate, appropriate and safe complementary food.[56]

Breastmilk alone is sufficient to meet all the nutritional needs of infants for the first six months of life. It supplies substances necessary for optimal brain development, stimulates immune factors, and crucially, protects infants from diarrhoea.[57]

Research also shows **an association between exclusive breastfeeding and stunting prevalence**. In a study of children in Bangladesh, groups that had a higher prevalence of exclusive breastfeeding for six months reported a 7.3% decrease in stunting prevalence.[58]

In Malaysia, the National Breastfeeding Policy states that all mothers are encouraged to breastfeed their babies exclusively with breast milk from birth until six months of age and thereafter to continue until the child is two years old.

The overall prevalence of exclusive breastfeeding among infants under six months old was 47.1%, while the median duration of breastfeeding among children aged 0-35 months old was

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[50] Ibid.
[51] I Aisha, B Attia, Z Fatima, J Uzma, M Qaisar et al, 'Maternal Anemia and its Impact on Nutritional Status of Children Under the Age of Two Years' (2018) 5 Biomed J Sci &Tech Res 1.
[52] N Milman, 'Iron Deficiency and Anaemia in Pregnant Women in Malaysia – Still a Significant and Challenging Health Problem' (2015) 2 J Preg Child Health 168.
[53] Ibid.
[54] Ibid.
[55] NAM Shukri, 'Maternal Milk Supplementation Among Pregnant Women in Kuantan, Pahang' (2018) 2 International Journal of Allied Health Sciences 179.
[56] UNICEF, *Infant and Young Child Feeding - Programming Guide* (UNICEF 2011) 7.
[57] Ibid, 5.
[58] SE Arifeen, DE Hoque, T Akter, M Rahman, ME Hoque, K Begum et al, 'Effect of The Integrated Management of Childhood Illness Strategy On Childhood Mortality and Nutrition in A Rural Area in Bangladesh: A Cluster Randomised Trial' (2009) 374 Lancet 393.

24 months.[59] This figure is higher than most developed countries, but can certainly still be improved upon.

Barriers to exclusive breastfeeding still remain, ranging from the lack of enforcement of regulations on the marketing of breastmilk substitutes, cultural practices and inadequate breastfeeding-friendly policies at the workforce. For instance, a 2011 study identified that Malaysia's maternity leave of only two months and poor breastfeeding facilities at work would deter working mothers from exclusively breastfeeding.[60] Similarly, a qualitative study of Malaysian mothers in urban areas reported that an early return to work and inadequate facilities at the workplace were significant barriers for mothers who held ambivalent views about breastfeeding.[61]

After six months, breastmilk should continue for up to two years of age or beyond, but should be complemented by other foods in order to meet all of a child's nutritional requirements. Children at this age have high nutritional needs to support their rapid growth and development, and are vulnerable to stunting. **Improvement of complementary feeding after six months of age has been shown to be most effective** to improve child growth, and thereby, together with maternal nutrition interventions, to contribute to reducing stunting.[62]

According to WHO guidelines, children after six months of age must be fed a diverse diet from four or more food groups (minimum dietary diversity), at a minimum frequency of two meals daily for children aged 6–8 month, and three times for 9–23 month olds (minimum meal frequency).[63]

However, 19.2% of Malaysian children aged 6-23 months do not achieve the prescribed minimum meal frequency.[64] This means that a significant number of children do not even receive two meals a day. With regards to minimum dietary diversity, 33.6% of Malaysian children do not consume at least four food groups.[65] On the whole, the prevalence of children who receive a minimum acceptable diet (where a child receives both the minimum dietary diversity and the minimum meal frequency for their age) is only 53.1% - meaning that **nearly half of all Malaysian children are simply not receiving adequate and appropriate complementary food** during their most crucial growth periods.[66]

iii. Family nutrition and health literacy

This is not surprising when only 6% of Malaysian adults are reported to have adequate fruits and/or vegetables in their daily diet. Fruits and vegetables are an important source of various micronutrients and have been shown to have a positive association with increased infant birth length.[67]

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[59] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 23.
[60] KL Tan, 'Factors Associated with Exclusive Breastfeeding Among Infants Under Six Months of Age in Peninsular Malaysia' (2011) 6 International Breastfeeding Journal 1.
[61] Z Sulaiman, P Liamputtong, LH Amir, 'Timing of Return to Work and Women's Breastfeeding Practices in Urban Malaysia: A Qualitative Study' (2018) 26 Health Soc Care Community 48.
[62] BP Marriott, A White, L Hadden, JC Davies, JC Wallingford, 'World Health Organization Infant and Young Child Feeding Indicators: Associations with Growth Measures in 14 Low-Income Countries (2012) 8 Matern Child Nutr 354.
[63] World Health Organization, *The WHO Global Data Bank on Infant and Young Child Feeding Data Sources and Inclusion Criteria* < https://www.who.int/nutrition/databases/infantfeeding/data_source_inclusion_criteria/en/> accessed 15 January 2018.
[64] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 26.
[65] Ibid, 27.
[66] Ibid.
[67] W Jang et al, 'Maternal Fruit and Vegetable or Vitamin C Consumption During Pregnancy Is Associated with Fetal Growth and Infant Growth Up to 6 Months' (2018) 17 Nutrition Journal 105

These statistics on children and adult dietary behaviour, when read together, hint at **a larger pattern of inadequate and inappropriate eating habits** within the family.

Much of this is rooted in Malaysians' lack of awareness about child stunting, but also about nutrition and health in general.

As stunting and maternal malnutrition are not easily visible in communities where short stature is common, parents and families fail to detect stunting in their children. Children's **short stature is often wrongly attributed to 'Malaysian' genetics**, with little awareness of the damaging effects of stunting.

Such lack of awareness is not surprising, when media attention and public campaigns have more commonly focussed on child obesity.

This is particularly problematic in the Malaysian context, where **only 6.6% of Malaysians adults possess adequate health literacy**, defined as 'the ability to access, understand, evaluate and communicate information as a way to promote, maintain and improve health in a variety of settings across the life-course'.[68] It is a matter of concern that most Malaysians do not have the minimum acceptable level of health literacy.

Viewed from this lens however, it is not surprising that both children and adults are not receiving enough nutrition from their diets. Addressing the lack of health literacy among Malaysians is a crucial and absolutely necessary step towards combating stunting.

3. Access to health services

Poor access to and quality of health services can leave children vulnerable to the vicious cycle of infection and stunting.

Regular health checks are necessary so that a child's growth can be monitored for stunting, and flagged for early intervention if necessary.

Children's access to health services can be measured via immunisation rates. In Malaysia, vaccination rates are impressive. The WHO recommends a level of at least 95% vaccination coverage. As high as 95.4% of children aged between 12-23 months completed their primary vaccination.[69] However, this figure might be overestimated as **there is no single reliable system in Malaysia for tracking of each individual's vaccination status** – currently it is reliant on immunisation cards and self-reporting by parents. Studies show that estimating vaccination coverage by parental recall can result in over-reported coverage.[70] Only 86.4% of children were actually verified with vaccination cards. Incomplete vaccinations still occur, especially among those with low education. This means that gaps still remain in terms of children's access to health services in Malaysia.

Access to health services is also important for women at every stage of the pregnancy. The health of the mother, both before and during pregnancy, is a significant risk factor for stunting in childhood.

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[68] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2015 (NHMS 2015): Non-communicable Diseases, Risk Factors & Other Health Problems. Vol. II* (2015) 286-287.
[69] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 4.
[70] KK Lim, YY Chan, A Noor Ani, J Rohani, ZA Siti Norfadhilah, and MR Santhi, 'Complete Immunization Coverage and Its Determinants Among Children In Malaysia: Findings From The National Health And Morbidity Survey (NHMS) 2016' (2017) 153 Public Health 52, 55.

Antenatal care services are important for early risk identification and intervention, especially for proven stunting risk factors such as maternal anaemia.

- In Bangladesh, researchers found that the **risk of stunting is much higher where the mother does not receive antenatal care**.[71]
- A study in Bhutan reported 31% higher odds of stunting in children whose mothers received three or few antenatal visits, while children with mothers who received antenatal care other than from a trained professional have a 51% higher risk of being stunted.[72]

The WHO recommends a minimum of four antenatal visits.[73] In Malaysia, 97.4% of women received this minimum number.[74] However, **only 69.1% were booked in the first trimester**, which is a key period for early risk identification.[75] Women from particular sociodemographic groups – such those 15-24 years old, from the 'other' ethnic group, non-citizens, with lower education and lower income – were likelier to have not received any antenatal care or failed to achieve the minimum antenatal visits.[76]

Healthcare professionals must ensure that all the appropriate activities are carried out at each clinical visit according to the child's age. These activities are stipulated in the Ministry of Health's guidelines.[77]

One particularly important activity is regular height or length monitoring of children. **Regular measurement and comparison with the WHO standards are not only necessary but is the only mechanism to track whether a child is growing adequately**. Failure to do this results in stunting being undetected until it is too late – bearing in mind that the consequences of stunting are largely irreversible.

The Ministry of Health's guidelines prescribe that children's length (up to 24 months) or height (from 24 months onwards) be measured, recorded and plotted on a growth chart at every visit.[78]

Our stakeholder interviews however indicate that **this does not always necessarily translate to reality in the day-to-day practices of Malaysian public hospitals**. There is a heightened importance to do this in public hospitals where 85% of the population receive maternal and infant care services – a majority of whom come from lower income households.[79]

Assessing the length or height of infants and children is not complicated but requires adherence to standardised procedures to avoid measurement errors and minimise bias.[80] Training in measuring the length/height of children and to plot and interpret the measurements is essential to identify

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[71] R Hong, JE Banta and JA Betancourt, 'Relationship Between Household Wealth Inequity and Chronic Child Undernutrition in Bangladesh (2006) 5 International Journal of Equity in Health 15.
[72] VM Aguayo, N Badgaiyan and K Paintal, 'Determinants of Child Stunting in The Royal Kingdom of Bhutan: An Indepth Analysis of Nationally Representative Data' (2015) 11 Maternal & Child Nutrition 333.
[73] World Health Organization, *Indicators for Monitoring the Millennium Development Goals: Definitions, Rationale, Concepts and Source*s <http://mdgs.un.org/unsd/mi/wiki/5-5-Antenatal-care-coverage-at-least-one-visit-and-at-least-four-visits.ashx> accessed 15 January 2018.
[74] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 48.
[75] Ibid.
[76] Ibid.
[77] Ministry of Health, *Manual Perkhidmatan Kesihatan Ibu & Anak Bagi Anggota Kejururawatan di Perkhidmatan Kesihatan Awam* (MOH 2016).
[78] Ministry of Health, *Manual Perkhidmatan Kesihatan Ibu & Anak Bagi Anggota Kejururawatan di Perkhidmatan Kesihatan Awam* (MOH 2016); Ministry of Health, *Garis Panduan Penggunaan Buku Rekod Kesihatan Bayi dan Kanak-kanak (0-6 Tahun,) Kad Simpanan Klinik Dan Carta Pertumbuhan WHO (2006) Carta Lilit Kepala CDC* (MOH 2011).
[79] Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016) 49.
[80] M De Onis and F Branca, 'Childhood Stunting: A Global Perspective' (2016) 12 Maternal & Child Nutrition 12, 14.

growth problems in children before it is too late. De Onis reports that **errors in plotting growth charts are especially common**, even amongst experienced professionals.[81] Differences in length and height measurements can result from myriad factors which include the setting in which the measurements were taken, the cooperation of the child, and data recording methods.

However, nurses themselves highlighted to us that the **plotting and monitoring of child growth charts do not feature heavily in their training** and are not emphasized enough. Some also mentioned that they could not carry these out due to the limited patient contact time in the increasingly burdened Malaysian public hospitals.

Instead, there is greater focus on measuring the weight and BMI of children.

In fact, this is indicative of the overall public health focus of the Ministry of Health. **Only two government initiatives at present address children in the critical 1,000-day period**: full cream milk powder distribution and *Program Pemulihan Kanak-Kanak Kekurangan Zat Makanan* (PPKZM). However, both only address severely wasted and underweight children instead of stunting. As such, it is no surprise that nurses focus more on recording the weight and BMI of children as these are the indicators used to determine qualification to the two sole nutrition interventions for children below two years old.

This focus on wasting and underweight is curious as stunting rates are higher than the two indicators, and despite the fact that stunting actually doubled the baseline rate in failing to meet the target set in the previous National Plan of Action for Nutrition of Malaysia.

This **disproportionate focus on weight** reflects a policy disconnect between the rhetoric of top decision makers and the on-the-ground practices of health professionals.

Even if low length/height-for-age is included into the programme criteria, only children from households that earn below the poverty line can qualify for the Food Basket programme under the PPKZM.[82] This ignores the data that stunting is prevalent even in higher income households in Malaysia.

Furthermore, the poverty line income of Malaysia is simply too low, especially when compared to Malaysia's current average standard of living – meaning that **households that face food insecurity may not even qualify** for the assistance.[83]

The programme's practically exclusive focus on the 'single, undernourished child' also ignores the importance of the nutrition status of the entire family, especially the mother.[84]

4. Access to a healthy environment

Poor environmental conditions – which encompasses the type of dwelling, safe water supply, adequate sanitation and garbage collection – are associated with increased infections and in turn, a higher probability of stunting in children.[85]

[81] Ibid, 15.
[82] Ministry of Health, *Garis Panduan Program Pemulihan Kanak-kanak Kekurangan Zat Makanan* (MOH 2010).
[83] M Ravallion, *Has Malaysia Virtually Eliminated Poverty?* <https://economicsandpoverty.com/2019/01/21/has-malaysia-virtually-eliminated-poverty/> accessed 25 January 2019.
[84] EE Cooper, 'Hunger of the body, hunger of the mind: The experience of food insecurity in rural, non-peninsular Malaysia' (2009) University of South Florida Graduate Theses and Dissertations, 237.
[85] A Lin, BF Arnold, S Afreen, R Goto, TMN Huda, R Haque et al, 'Household environmental conditions are associated with enteropathy and impaired growth in rural Bangladesh' (2013) 89 Am J Trop Med Hyg 130.

A Libyan study found that **a poor housing environment increased the risk of stunting**. [86] The same study discovered that the quality of the housing environment could mediate most of the positive effects of increased income on child height. Another study noted that improved sanitation and a reduction in open defecation by 20% raised the average height-for-age z-score by 0.1 standard deviations.[87]

Safe and readily available water supply is especially important to ensure food hygiene hence prevent the risk of pathogens that can cause diarrhoea to the child.

Malaysia has impressive performance in terms of access to adequate water and sanitation services. 92% of the population have access to safely managed water services while 82% have safely managed sanitation services, with zero prevalence of open defecation.[88] In other words, the majority of Malaysians have access to a piped central water supply and an adequate sanitation facility.

However, the Special Rapporteur on the human rights to safe drinking water and sanitation in his recent official visit to Malaysia highlighted that "**there are still gaps for the realization of the human rights to water and sanitation**".[89] He noted that Orang Asli villagers still have to resort to other water sources that can impact sanitation. It is no wonder that stunting among Orang Asli communities are extremely high – a study reported that 64% of Orang Asli children in Peninsular Malaysia were stunted.[90]

In addition, **existing initiatives are simply not multidimensional** in practice and do not address the interconnected causes of stunting as identified in the UNICEF Framework in Figure 9. Once again, the PPKZM exemplifies this problem. Under the PPKZM, children who meet the criteria are given a standard 'food basket' made out of basic food combinations such as rice, breakfast cereals, biscuits, margarine, eggs, multivitamins, sardines, anchovies, rice noodles, chocolate malt powder, cooking oil, full cream powdered milk and special milk for weight gain. The PPKZM's official guidelines state that the children are also given immunisation and the necessary treatment, while health education focusing on child nutrition and hygiene are conveyed to parents. Outside of this however, there is little else that addresses the environmental factors of malnutrition. A 2009 evaluation of the PPKZM also found that in practice, **the logistics of the food basket programme often overshadow the other multisectoral aspects** of the initiative.[91] PPKZM's only mechanism to address multidimensional issues is through referral to other government agencies. For instance, should there be issues with access to sanitary facilities and clean water, the programme officer must make referrals to the appropriate agencies and initiatives, such as the *Program Pembangunan Rakyat Termiskin* (PPRT) which provides access to clean water and sanitation facilities.

However, the same report found that staff involved with the PPKZM often fail to make the appropriate referrals to these other agencies, and also 'typically lack nutrition credentials' hence 'cannot be expected to be aware of all of the contributing factors and consequences of malnutrition'.[92]

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[86] A El Taguri, I Betilmal, S Mahmud, A Monem Ahmed, O Goulet, P Galan and S Hercberg, 'Risk Factors For Stunting Among Under-Fives In Libya (2009) 12 Public Health Nutrition 1141.
[87] D Spears, 'How Much International Variation in Child Height Can Sanitation Explain?' (2013) World Bank Policy Research Working Paper 6351.
[88] WHO/UNICEF Joint Monitoring Programme, *Progress on sanitation and drinking water – 2015 update and MDG assessment* (WHO/UNICEF 2015).
[89] The Office of the United Nations High Commissioner for Human Rights, *Statement at The Conclusion of the Official Visit to Malaysia by the Special Rapporteur On the Human Rights to Safe Drinking Water and Sanitation, Mr. Léo Heller* (27 November 2018) <https://www.ohchr.org/FR/NewsEvents/Pages/DisplayNews.aspx?NewsID=23928&LangID=E> accessed 20 December 2018.
[90] CY Wong, MS Zalilah, EY Chua, S Norhasmah, YS Chin and A Siti Nur'Asyura, 'Double-burden of malnutrition among the indigenous peoples (Orang Asli) of Peninsular Malaysia' (2015) 15 BMC Public Health 680.
[91] EE Cooper, 'Hunger of the body, hunger of the mind: The experience of food insecurity in rural, non-peninsular Malaysia' (2009) University of South Florida Graduate Theses and Dissertations, 237.
[92] Ibid.

RECOMMENDATIONS

As illustrated above, **gaps exist when it comes to the mother and child's access to the underlying determinants of nutrition** in Malaysia: household food security, adequate care and feeding practices, access to quality health services, and the presence of a healthy environment.

Just as there is no single root cause of stunting, there is no 'silver bullet' intervention that will solve stunting. There are different yet interconnected and mutually-reinforcing causes of stunting, which in turn require a range of different interventions.

While complex, **stunting rates can be reduced**. Studies increasingly show that substantial improvements in the height of children can be achieved in just one generation if the formerly stunted mother receives adequate nutrition and experiences improved health and environment conditions before conceiving. In fact, there is evidence that even short-term nutritional improvement within the first 1,000-days can result in a mean gain in adult height of 8 cm greater than mean parental height – in only one generation.[93]

Current initiatives implemented by Malaysia are however **too narrowly focused on food assistance** and do not sufficiently address the underlying multipronged causes of stunting.

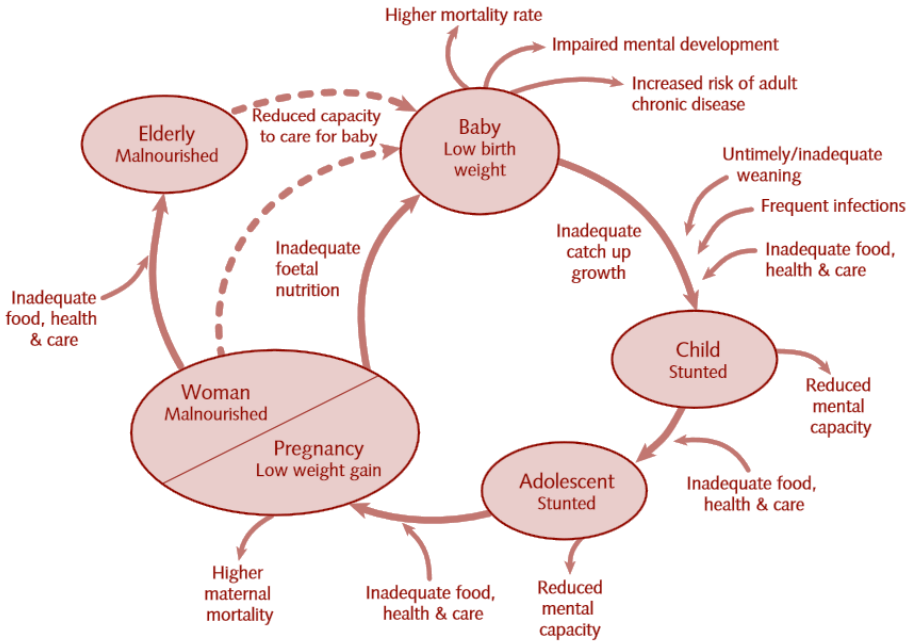

Figure 10: Life cycle of malnutrition (ACC/SCN 2000)

Stunting in children must not be viewed in isolation, but seen as **part of the malnutrition life cycle** (Figure 10), whereby the health and nutrition of mothers and girls, in particular, play an important role in the health and nutrition of future generations.

Addressing stunting is also an important step in tackling Malaysia's 'triple burden of malnutrition' – obesity, anaemia, and stunting – which threatens to grow into a public health emergency.

[93] C Garza, E Borghi, AW Onyango and M de Onis, 'Parental Height and Child Growth from Birth to 2 Years in the WHO Multicentre Growth Reference Study' (2013) 9 Maternal & Child Nutrition 58.

The interventions that Malaysia should take to address chronic malnutrition and stunting must be driven by these principles: **they must address the underlying causes** of stunting; **be multi-sectoral** in approach; and **focus on the critical 1,000-day window**.

Guided by these principles, our broad recommendations are as follows:

1. Make addressing stunting a national priority by establishing high-level political mechanisms to drive initiatives

It is important that addressing childhood stunting is made a national priority that is backed with political commitment from the very top levels of government.

The Malaysian government's proposed National Children's Wellbeing Roadmap, which aims to create comprehensive strategic programmes covering education, poverty, housing and nutrition for children, is a step in the right direction. Like Peru, there exists a need for a national central mechanism for the implementation of the national plan, especially in terms of coordinating the multi-sectoral interventions.

It has been announced that the Health Ministry, Rural Development Ministry, Education Ministry, Home Ministry and the Women, Family and Community Development Ministry will function as a steering committee to monitor the roadmap's direction, with the Women's Ministry serving as the secretariat. **Such inter-ministry involvement is key** to address the multiple determinants of malnutrition in Malaysia.

Taking heed of the lessons from Peru's success story, the decision of which government office takes the lead should reflect the elevated importance of tackling stunting. On paper, Malaysia's current Nutrition Action Plan meets global best practices in terms of content but **lacks the high-level political commitment** that is crucial to drive the government action needed to tackle stunting.

PERU'S SUCCESS STORY

In less than a decade, Peru successfully halved its rate of stunting among children under five from around 28% in 2008 to around 13% in 2016.

This was driven by unprecedented political commitment from the very top, with all ten Peruvian presidential candidates in the 2006 election committing to reduce malnutrition in children under the age of five by five percentage points within five years. Four consecutive governments under different Presidents have prioritised the fight against stunting and dedicated the necessary financial resources.

The Peru government developed the National Strategy for Poverty Reduction and Economic Opportunities (CRECER) that was implemented at national, regional and district levels and involved various sectors including health, education, water and sanitation, housing, agriculture, and a cash transfer component.

One of the issues facing CRECER was to address coordination and cooperation between the different government ministries and agencies.

Initially, the Ministry of Women and Social Development was touted to lead the strategy's policy coordination as this would fall within the Ministry's natural policy mandate. However, it was thought that the Ministry's limited political standing would deter cooperation from other more 'senior' ministries such as the Finance Ministry.

Ultimately, the Office of the Prime Minister was tasked with the mandate of the coordination, execution, monitoring and evaluation of CRECER. The Office of the Prime Minister was hailed for its effectiveness in promoting effective coordination between the different ministries and also between central and regional governments.

Source: A Acosta and L Haddad, 'The Politics of Success in the Fight Against Malnutrition in Peru' (2014) 44 Food Policy 26.

The proposed National Children's Wellbeing Roadmap presents an opportunity to address this.

The fact that Malaysia's Deputy Prime Minister also heads the Women, Family and Community Development Minister augurs well. This however can go further. The issue of chronic malnutrition and stunting **cannot be viewed as a mere 'children and women' issue**, but must be seen as a national problem that demands prioritisation.

To this end, we propose that **the Prime Minister chair the steering committee** to indicate the government's strongest commitment to address chronic malnutrition.

The involvement of more 'senior' ministries such as the Ministry of Finance and the Ministry of Economic Affairs should also be considered in the same vein. The steering committee can emulate the multi-agency structure of Malaysia's National Security Council, which is chaired by the Prime Minister and consists of the Deputy Prime Minister as Deputy Chairman, three ministers (Minister of Defence, Minister of Foreign Affairs and the Minister of Communications and Multimedia), the Director General of the Council, the Chief Secretary to the Government, the Chief of Defence Forces and the Inspector-General of Police. Having the top two leaders of the government lead this committee will send a powerful message.

To complement this, **a bipartisan Parliamentary standing committee** should be established in order to monitor and hold accountable the government's implementation of the National Children's Wellbeing Roadmap.

As part of the Roadmap, the steering committee should pay special attention to the following:

- **Implement nutrition-specific interventions at scale and with better coordination**. The Lancet identified ten key nutrition interventions which would reduce stunting by 20% if 90% of the target population was covered.[94] Malaysia has already implemented many of the recommended interventions such as micronutrient supplementation, but these lack scale and coordination;
- **Review and consolidate existing programmes that are ineffective** or do not fit a multisectoral approach such as the PPKZM;
- **Introduce to health workers more training** on nutrition knowledge, holistic malnutrition management, and stunting detection that is rooted in the UNICEF Conceptual Framework for Undernutrition;
- **Setting a clear goal** with regular measurable targets, such as a 40% reduction in the number of children under five who suffer from stunting by 2025;
- **Ensure growth monitoring is carried out** as standard practice in all child visits to public health facilities;
- **Strengthen the national health information system** by improving data collection, increasing the regularity of nutrition surveys which cover population-level anthropometric data and the different determinants of nutrition, and setting in place effective monitoring and evaluation mechanisms;
- **Consider measures such as compulsory vaccination to improve immunisation rates**, which can indirectly improve detection and monitoring of stunting in children;

[94] ZA Bhutta, JK Das, A Rizvi, MF Gaffey, N Walker, S Horton S et al, 'Evidence-Based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?' (2103) 382 Lancet 452.

- **Consider mandatory fortification of staple foods** such as rice, flour, oil and salt as people can improve their nutrient intakes while eating the same affordable staple items without having to change their diets; and
- **Support more research** on stunting and malnutrition in Malaysia, particularly longitudinal cohort studies.

2. Introduce an unconditional cash transfer scheme covering the 1,000-day window

We also propose that the Malaysian government look to implement **an unconditional cash transfer programme targeting all children below the age of two years old**.[95] The benefit would cover the crucial first 1,000-days from the start of a woman's pregnancy to the child's second birthday.

Why cash over other welfare aid mechanisms such as vouchers or food-based assistance?

The fungibility of cash lends it a flexibility that vouchers and in-kind assistance simply do not provide. With cash, families can choose directly which needs to prioritise. Caregivers can be empowered to make financial decisions according to their priorities by assessing for themselves which underlying determinant of malnutrition requires more financial attention at that particular time.

Cash also avoids the stigma associated with instruments such as food stamps. Simply put, cash transfers are an instance of a tool that is in line with the broader holistic approach of addressing the multipronged determinants of stunting, instead of only narrowly focusing on food assistance.

Common misconceptions surrounding cash transfers – such as how cash promotes dependency and leads to abuse – have also been debunked by extensive evidence.[96] As a 2005 British study discovered, parents who were given cash benefits to help raise their young children 'increased spending on items such as children's clothing, books, and toys, and decreased spending on alcohol and tobacco'.[97]

Cash transfers would impact nutritional outcomes by simply making additional financial resources available for all the underlying determinants of stunting: household food security, adequate care and feeding practices, access to quality health services, and the presence of a healthy environment.[98] A cash transfer would increase the disposable income of the household and improve their purchasing power.

This is pertinent as **the direct financial costs of childrearing are not insignificant**. In fact, household family expenditures often increase noticeably when couples have children due to direct childcare-related expenses such as diapers, baby food and day care, but also because other existing household expenditures, such as on food, increase as well. The recent 'Expenditure Guide for

[95] For an overview of the design and management of cash transfer programmes, see: S Barrett and S Kidd, 'The Design and Management of Cash Transfer Programmes' 3 KfW Development Bank Materials on Development Financing 1.
[96] S Handa, S Daidone, A Peterman, B Davis, A Pereira, T Palermo and J Yablonski, 'Myth-Busting? Confronting Six Common Perceptions about Unconditional Cash Transfers as a Poverty Reduction Strategy in Africa' (2018) 33 World Bank Research Observer 259.
[97] P Gregg, J Waldfogel and E Washbrook, 'That's the Way the Money Goes: Expenditure Patterns as Real Incomes Rise for the Poorest Families with Children' in J Hills and K Stewart (eds) *A More Equal Society? New Labour, Poverty, Inequality, and Exclusion* (Policy Press 2005).
[98] R de Groot, T Palermo, S Handa, LP Ragno and A Peterman, 'Cash Transfers and Child Nutrition: Pathways and Impacts' (2017) 35 Dev Policy Rev 621.

Malaysian Individuals & Families 2019' by Malaysia's Employees' Provident Fund calculated that having just one child in the Klang Valley raises the minimum expenditure needed for a reasonable standard of living from RM4,420 to RM5,730 – an increase of nearly 30%.[99]

Specifically, beneficiary households can use the additional income to purchase food at higher quantities and quality, or to invest in food production assets - this can lead to improved household food security and diet diversity, and in turn, the child's nutritional intake.[100] The cash transfer can also improve the domestic-level environment for the child. The beneficiary family can use the money to improve home conditions which include water and sanitation facilities, or to simply purchase household items that will reduce the child's exposure to infection such as a refrigerator or kettle. The money can also be used to improve access to child and maternal health by reducing the cost of health services, which includes out-of-pocket healthcare expenses, medical supplies, and transportation costs. Studies in fact show that cash transfers increased the use of preventive service and immunisation coverage in general, but also improved maternal health indicators in terms of prenatal care, skilled birth attendance and facility births.[101]

Studies have also shown how additional income through cash transfers can **improve the household's physical and mental wellbeing** by decreasing poverty-related stress, which will in turn improve the care, parenting and support provided to the children.[102]

Cash transfers can also **improve the standing of women in intra-household decision-making** as the mother or female caregiver will be able to better advocate for her interests by controlling more resources. This is crucial, as it has been found that women's income and control over resources is a pathway to improved child nutritional status.[103] In addition, cash transfers can **help reduce the need for pregnant women to perform dangerous or strenuous paid work** that might affect birth outcomes.

The interactions between the different underlying determinants of nutrition caused by the positive effects of cash transfers – such as increased resources for food, health, and care complemented by improved care by the caregiver to the child – can ultimately improve the child's nutritional outcomes. **Overall, a positive link between cash transfers and child nutritional outcomes was found in Brazil, Colombia, Ecuador, Mexico, Philippines, South Africa, Sri Lanka and Zambia**.[104] Mexico's cash transfer programme *Progresa* is one the world's most extensively evaluated interventions, and most of these reviews reported positive significant effects on child height.[105] One of the largest impacts of cash transfers on stunting was reported in the Philippines' *Pantawid* programme where the rate of severe stunting among children 6-36 months old decreased by 10 percentage points.[106]

The evidence indicates that larger and more frequent cash transfers aimed at the first two years of life have more positive effects on nutritional outcomes.[107] This informs our view that cash transfers

[99] KWSP, *Belanjawanku: Expenditure Guide for Malaysian Individuals & Families* (KWSP 2019).
[100] Ibid, 626.
[101] Bastagli et al, *Cash Transfers: What Does the Evidence Say?* (Overseas Development Institute 2016) 128; T Reynolds, CL Anderson, P Biscaye, D Coomes, T Madsen, E Ebeling and AR Favreau, 'Review of Long-Term Impacts of Cash Transfer Programs' (2017) EPAR Technical Report 359.
[102] R de Groot, T Palermo, S Handa, LP Ragno, and A Peterman, 'Cash Transfers and Child Nutrition: What we know and what we need to know' (2015) UNICEF Innocenti Working Paper 2015-07, 8.
[103] E Owusu-Addo and R Cross, 'The Impact of Conditional Cash Transfers On Child Health in Low-And Middle-Income Countries: A Systematic Review' (2014) 59 International Journal of Public Health 609.
[104] R de Groot, T Palermo, S Handa, LP Ragno and A Peterman, 'Cash Transfers and Child Nutrition: Pathways and Impacts' (2017) 35 Dev Policy Rev 621, 630.
[105] Ibid.
[106] Ibid, 633.
[107] J Manley, S Gitter and V Slavchevska, *How Effective Are Cash Transfer Programmes at Improving Nutritional Status? A Rapid Evidence Assessment of Programmes' Effects on Anthropometric Outcomes* (EPPI-Centre 2012); R de Groot, T Palermo, S Handa, LP Ragno and A Peterman, 'Cash Transfers and Child Nutrition: Pathways and Impacts' (2017) 35 Dev

must be unconditional and universal to all new-born children under the age of two years old regardless of income.

Why unconditional? As Malaysia already performs well in indicators that are usually used as conditions such as immunisation coverage and access to healthcare, we do not see how imposing a condition would change behaviour in a manner that can improve the underlying determinants of malnutrition, aside from adding on unnecessary cost and administrative burden. This was the case for Mexico's *Progresa* where cash transfers had minimal impact on immunisation coverage as baseline rates were already high to start with.[108] Imposing this condition actually cost Mexico 24% of the overall total costs of the programme, excluding transfers.[109]

Why universal instead of poverty-targeted? While the current trend in social protection in Malaysia centres around targeting B40 households, we opine that this approach is less suitable for a number of reasons.

First, **stunting in Malaysia is high across all income levels**, not just households in the B40 quartile.

Second, targeting all children within the 1,000-day window regardless of household income will **prevent targeting errors that are prevalent in poverty-targeting schemes**.

Analysing national household survey datasets from 23 countries, Kidd et al (2019) sought to examine the targeting accuracy of 38 social protection schemes in those countries by evaluating: (i) the proportion of households incorrectly excluded, when measured against the scheme's intended coverage; and (ii) the degree of exclusion of the poorest 20 percent of households from the scheme.[110] The study found that the most effective targeted social protection programme incorrectly excluded 44% of its intended coverage, while 12 other schemes have exclusion errors above 70%, 8 above 80% and 5 above 90%.[111] The study reported that **even the best programme excluded over half of the poorest 20% of households; others exclude even more**.[112] If the poorest beneficiaries are left out due to such exclusion errors, this would then defeat the very purpose of targeting in the first place, which is to ensure that the poorest segments receive aid.

Notably, the report discovered that **exclusion errors decreases as beneficiary coverage increases** towards universality, a trend which is captured in Figure 11.[113] Universal schemes had the lowest exclusion errors and were the most effective in reaching both their intended recipients and the poorest 20 per cent.[114] For instance, Georgia's Old Age Pension has no measurable error, while Mongolia's Universal Child Money scheme reached 99 per cent of the poorest 20 per cent of children.[115]

As higher income groups may not claim the benefit due to its lower relative value and administrative inconvenience, the trade-off between a wider protection net and richer beneficiaries receiving the cash transfer may turn out to be negligible. It is also unproblematic if these higher-income recipients utilise the cash to improve their children's underlying determinants of nutrition.

Policy Rev 621; JL Leroy, M Ruel and E Verhofstadt, 'The Impact of Conditional Cash Transfer Programmes On Child Nutrition: A Review of Evidence Using a Programme Theory Framework' (2009) 1 Journal of Development Effectiveness 103-129.

[108] R de Groot, T Palermo, S Handa, LP Ragno and A Peterman, 'Cash Transfers and Child Nutrition: Pathways and Impacts' (2017) 35 Dev Policy Rev 621, 634.

[109] N Caldes, D Coady and J Maluccio, 'The Cost of Poverty Alleviation Transfer Programs: A Comparative Analysis of Three Programs in Latin America' (2006) 34 World Development 818.

[110] S Kidd and D Athias, 'Hit and Miss: An Assessment of Targeting Effectiveness in Social Protection' (2019) Development Pathways Working Paper.

[111] Ibid, 23.

[112] Ibid, 24.

[113] Ibid, 26.

[114] Ibid, 27.

[115] Ibid.

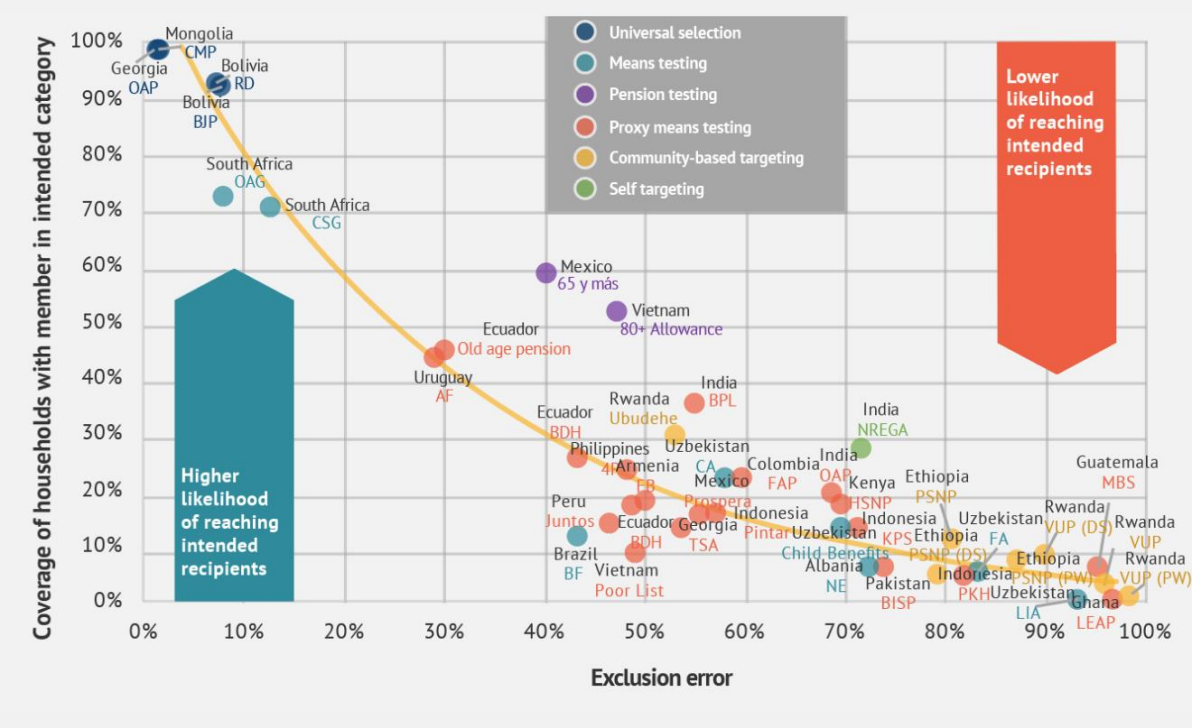

Figure 11: Relationship between coverage and exclusion errors measured against intended recipients (Kidd 2019)

Additionally, being 'poor' is not a permanent category fixed in time, as household finances can be affected by sudden and unexpected economic shocks at any time. **A universal cash handout programme can function as a safety net** that would minimise the effects of an unforeseen financial emergency on the determinants of nutrition.

It also ensures that the child is **protected from the 'cliff effect' of income-targeted programmes**. This is where families can lose important welfare assistance once they gain a very marginal salary rise that takes their household income beyond the targeted income threshold. The value of the assistance that is lost is often larger than the income raise. For example, while a family now earns RM 50 more a month, they may lose hundreds more ringgit worth of welfare aid. This can also act as a work disincentive, where the poor are essentially punished for increasing their incomes.

Furthermore, **unintended consequences can arise from poverty targeting** as seen in the Philippines, where stunting rates rose an average of 11 percentage points among non-beneficiary children who were excluded from the cash transfer scheme due to income.[116] In fact, the deterioration in stunting among non-beneficiary children outweighed the improvement that beneficiaries experienced. Offering a cash transfer scheme on a universal basis nationwide could help avoid similar unintended harm.[117]

Indeed, a universal scheme would cost more than a poverty-targeted initiative. However, it is not necessarily expensive.

[116] D Filmer, J Friedman, E Kandpal and J Onishi, 'General Equilibrium Effects of Targeted Cash Transfers: Nutrition Impacts on Non-Beneficiary Children' (2018) World Bank Policy Research Working Paper 8377.
[117] S Kidd, 'Poverty-targeting harms non-beneficiary children in the Philippines' (2018) *Development Pathways* <https://www.developmentpathways.co.uk/blog/poverty-targeting-harms-non-beneficiary-children-in-the-philippines/> accessed 10 July 2018.

UNICEF Malaysia's calculations of a universal transfer of RM 200 monthly **do not even reach 1% of Malaysia's GDP and government expenditure**, as shown in Table 1 below.[118] Such a scheme can be financed by reallocating current fuel subsidies; potentials gains from the lower administrative costs of universal cash transfer versus costlier targeted conditional schemes; ring-fencing revenue from the recently announced sugar tax or other 'sin' taxes; and the consolidation and abolition of costly but ineffective existing programmes.

Eligibility	2017 Monthly Amount (MYR)	Number of Beneficiaries (in thousands)			Expenditure (% of GDP)		
		2017	2021	2031	2017	2021	2031
1000 Days (From pregnancy until under-2)	150	1,286.37	1,227.93	1,201.54	0.17	0.13	0.08
	200				0.23	0.18	0.11

Table 1: Projection of costs of universal child transfer (UNICEF Malaysia 2017)

If economic resources are scarce, the argument to invest in a child-focussed aid is even stronger as **resources should then be concentrated where the impact of welfare benefits are maximised**.

As it stands, choosing not to invest in children is simply not a good economic decision. Beyond stunting, a child cash transfer would not just impact nutrition determinants alone – microsimulations of universal child benefits show that the transfers would have **significant effects on households' purchasing power and macro-economic poverty**.[119]

Ultimately, the amount of financial resources allocated to this must, as said before, reflect the government's political will to address chronic malnutrition. More than that, it must reflect the view of **children as a collective responsibility** and therefore, a collective investment.

3. Launch mass communications and public awareness campaigns on stunting and malnutrition

Studies have shown how behaviour change communication – which is the strategic use of communication to promote positive health outcomes – can help improve behaviour that affects nutritional practices such as exclusive breastfeeding and complementary feeding.[120]

The 'invisibility' of stunting in Malaysia coupled with Malaysians' poor health literacy highlight the need for a **nationwide mass communications campaign** on stunting and nutrition.

Currently, numerous public campaigns exist such as the Malaysian Healthy Plate initiative and Healthy Eating through Healthy Shopping programme. Nutrition education for pregnant and lactating mothers are carried out in clinics and hospitals, while education on feeding practices of infant and young children are integrated into public health programmes in clinics. The latter

[118] For a detailed breakdown of the cost and methodology, see A Rabi, A Deviyati, P N Ali, and E Mattellone, 'Introducing and Costing a Child Grant in Malaysia: A Step Forward for Socially Inclusive and Economically Productive Malaysia' (2017) UNICEF Malaysia Working Paper Series WP/2017/002.
[119] B Gelders, 'Microsimulations of Universal Child Grants in Indonesia' (Presentation at International Conference on Universal Child Grants, 6-8 February 2019, Geneva) <https://www.developmentpathways.co.uk/wp-content/uploads/2019/02/Gelders_Bjorn_7Feb.pdf> accessed 10 February 2019.
[120] Alive and Thrive et al, *Roadmap for Developing an Advocacy and Behaviour Change Communication Strategy for Stunting Reduction in Indonesia* (2018).

includes dissemination of written materials, postnatal talks, seminars, and even cooking demonstrations.

Despite the existence of these programmes, there is limited reach and low public participation. **Current nutrition campaigns do not explain stunting**, its impact on children's health and development, nor the 1,000-day critical window. Instead, there is a heavy focus on obesity and non-communicable diseases.

There is also an **overreliance on face-to-face communications** in healthcare facilities like hospitals and clinics, which while invaluable, stretches already limited patient contact time and lacks the wide audience reach of mass media campaigns.

Existing media campaigns on the other hand, have been described in our interviews as boring and not engaging. That only 6% of Malaysians possess adequate health literacy hint at the ineffectiveness of these campaigns.

PERU'S MEDIA CAMPAIGN AGAINST STUNTING

In Peru, media campaigns to educate caregivers and families about the irreversible consequences of stunting and how to prevent it were crucial in the country's success in more than halving its high rates of stunting.[121] One particularly effective video, titled 'My Future in My First Centimetres', made explicit that a child is chronically malnourished if they were under 80 cm tall on their second birthday.[122] This video raised awareness among many Peruvian parents who were simply unaware that their children were malnourished. It helped address the common misperception that their children's short birth length or height was irreversible and caused by genetics. The video – produced in Spanish, English and Queucha – was distributed to every health centre under CRECER to inform public officials and even shown in community centres in the most remote areas. Till this day, this campaign is still broadcasted on radio and television.

A low-cost but highly effective tool to complement a large-scale communications campaign are **home-based growth charts**, also known as length mats. Length mats provide parents, caregivers and healthcare workers with a visual aid to see if a child is growing healthily for their age.

Length mats are not a substitute for regular height monitoring and plotting, but can be an excellent tool to raise awareness for behavioural change by sensitising caregivers to the phenomena of stunting and also to promote better health and nutrition practices. Using full-sized growth charts or length mats, parents can directly compare their children's height to the expected height range for children of the same age hence assist in the early detection of stunting.

The use of length mats has been implemented in stunting prevention initiatives in Bolivia, Guatemala, Zambia, Cambodia and Indonesia to positive feedback.

[121] A Marini, C Rokx and P Gallagher, *Standing Tall: Peru's Success in Overcoming its Stunting Crisis* (World Bank 2017) 37.
[122] World Bank, 'My Future in My First Centimeters' (Youtube, 6 February 2008) <https://www.youtube.com/watch?v=mJieb2Xgt9U&feature=youtu.be> accessed 15 December 2018.

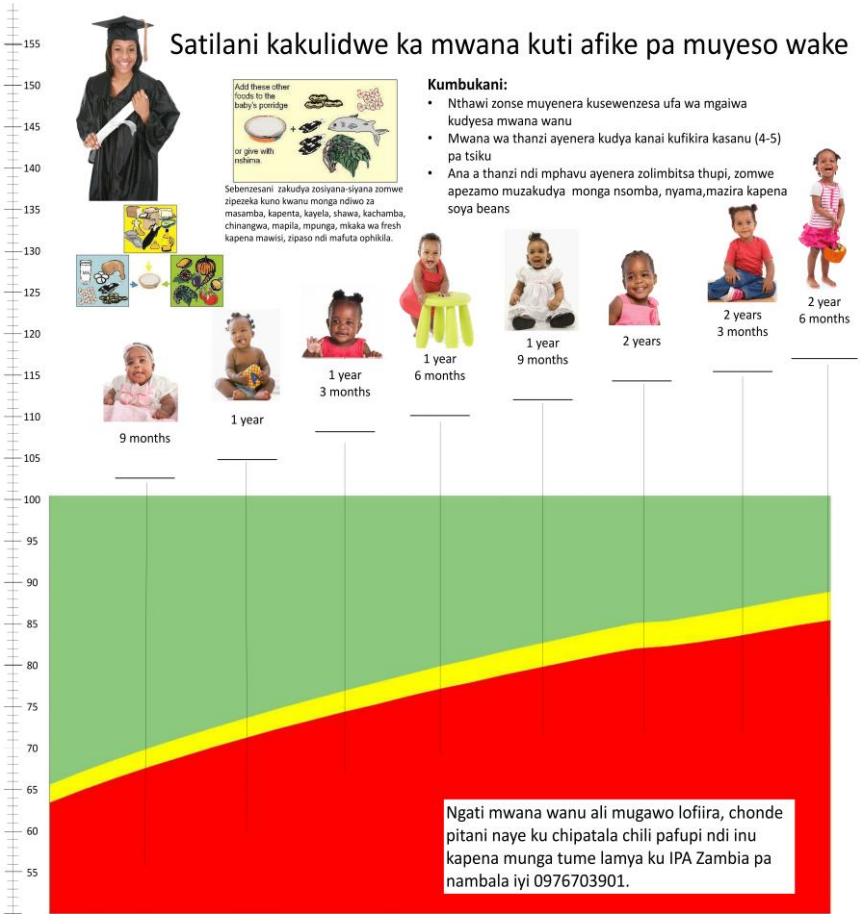

Figure 12: Example of length mat used in Zambia (Fink et al 2017)

In Zambia, researchers reported that **stunting rates were reduced by 22 percentage points** when parents were provided with full-sized growth charts that included information about nutrition.[123]

The same review found that community-based growth monitoring with nutritional supplements did not have a statistically significant impact on stunting rates. This result was surprising because while community-based meetings were led by trained health professionals who provided food supplements and nutritional advice to caregivers, parents in the grown charts programme only received nutritional information through the provided charts in their homes.

Growth charts with information on stunting and nutrition can therefore be a cheap and highly effective tool for Malaysia, not only to promote awareness of stunting and nutrition, but to also directly improve stunting rates. ■

[123] G Fink, R Levenson, S Tembo, PC Rockers, 'Home- And Community-Based Growth Monitoring to Reduce Early Life Growth Faltering: An Open-Label, Cluster-Randomized Controlled Trial' (2017) 106 Am J Clin Nutr 1070.

REFERENCES

Acosta A and Haddad L, 'The Politics of Success in the Fight Against Malnutrition in Peru' (2014) 44 Food Policy 26

Addo OY et al, 'Maternal Height and Child Growth Patterns from Birth To Adulthood' (2013) 163 The Journal of Pediatrics 549.

Aguayo VM et al, 'Determinants of Child Stunting in The Royal Kingdom of Bhutan: An Indepth Analysis of Nationally Representative Data' (2015) 11 Maternal & Child Nutrition 333.

Aisha I et al, 'Maternal Anemia and its Impact on Nutritional Status of Children Under the Age of Two Years' (2018) 5 Biomed J Sci &Tech Res 1.

Alive and Thrive et al, *Roadmap for Developing an Advocacy and Behaviour Change Communication Strategy for Stunting Reduction in Indonesia* (2018).

Arifeen SE et al, 'Effect of The Integrated Management of Childhood Illness Strategy On Childhood Mortality and Nutrition in A Rural Area in Bangladesh: A Cluster Randomised Trial' (2009) 374 Lancet 393.

Barrett S and Kidd S, 'The Design and Management of Cash Transfer Programmes' 3 KfW Development Bank Materials on Development Financing 1.

Bhutta ZA et al, 'Evidence-Based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?' (2103) 382 Lancet 452.

Black RE et al, 'Maternal and Child Undernutrition and Overweight in Low Income and Middle-Income Countries' (2013) 382 Lancet 427.

--, 'Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences' (2008) 371 The Lancet 243.

Brown JL and Pollitt E, 'Malnutrition, Poverty and Intellectual Development' (1996) 274 Scientific American 38.

Caldes N et al, 'The Cost of Poverty Alleviation Transfer Programs: A Comparative Analysis of Three Programs in Latin America' (2006) 34 World Development 818.

Carba DB et al, 'Early Childhood Length-For-Age Is Associated with The Work Status of Filipino Young Adults' (2009) 7 Economics and Human Biology 7.

Cooper EE, 'Hunger of the body, hunger of the mind: The experience of food insecurity in rural, non-peninsular Malaysia' (2009) University of South Florida Graduate Theses and Dissertations.

Crookston BT et al, 'Postinfancy Growth, Schooling, and Cognitive Achievement: Young Lives' (2013) 98 Am J Clin Nutr 1555.

Cusick S and Georgieff MK, *The First 1,000 Days of Life: The Brain's Window of Opportunity* (UNICEF Office of Research-Innocenti) < https://www.unicef-irc.org/article/958-the-first-1000-days-of-life-the-brains-window-of-opportunity.html> accessed 15 February 2018.

de Groot R et al, 'Cash Transfers and Child Nutrition: Pathways and Impacts' (2017) 35 Dev Policy Rev 621

--, 'Cash Transfers and Child Nutrition: What we know and what we need to know' (2015) UNICEF Innocenti Working Paper 2015-07, 8.

De Onis M and Branca F, 'Childhood Stunting: A Global Perspective' (2016) 12 Maternal & Child Nutrition 12.

El Taguri A et al, 'Risk Factors For Stunting Among Under-Fives In Libya (2009) 12 Public Health Nutrition 1141.

F Bastagli et al, *Cash Transfers: What Does the Evidence Say?* (Overseas Development Institute 2016)

Fernald LC and Neufeld lm, 'Overweight with Concurrent Stunting in Very Young Children from Rural Mexico: Prevalence and Associated Factors' (2006) 61 Eur J Clin Nutr 623.

Filmer D et al, 'General Equilibrium Effects of Targeted Cash Transfers: Nutrition Impacts on Non-Beneficiary Children' (2018) World Bank Policy Research Working Paper 8377.

Fink G et al, 'Home- And Community-Based Growth Monitoring to Reduce Early Life Growth Faltering: An Open-Label, Cluster-Randomized Controlled Trial' (2017) 106 Am J Clin Nutr 1070.

Food and Agriculture Organization of the United Nations, *Trade Reforms and Food Security: Conceptualizing the Linkages* (FAO 2003).

Galasso E and Wagstaff A, 'The Aggregate Income Losses from Childhood Stunting and the Returns to a Nutrition Intervention Aimed at Reducing Stunting' (2018) World Bank Policy Research Working Paper 8536.

Garza C et al, 'Parental Height and Child Growth from Birth to 2 Years in the WHO Multicentre Growth Reference Study' (2013) 9 Maternal & Child Nutrition 58.

Gaskin PS et al, 'Early Linear Growth Retardation and Later Blood Pressure' (2000) 54 Eur J Clin Nutr 563.

Gelders B, 'Microsimulations of Universal Child Grants in Indonesia' (Presentation at International Conference on Universal Child Grants, 6-8 February 2019, Geneva) <https://www.developmentpathways.co.uk/wp-content/uploads/2019/02/Gelders_Bjorn_7Feb.pdf> accessed 10 February 2019.

Giles J et al, 'Early Childhood Nutrition, Availability of Health Service Providers and Life Outcomes as Young Adults: Evidence from Indonesia' (Surveymeter Working Paper, forthcoming).

Grantham-McGregor S et al, 'Developmental Potential in The First 5 Years for Children in Developing Countries' (2007) 369 Lancet 60.

Hackett M et al, 'Household Food Insecurity Associated with Stunting and Underweight Among Preschool Children in Antioquia, Colombia' (2009) 25 Rev Panam Salud Pública 506.

Handa S et al, 'Myth-Busting? Confronting Six Common Perceptions about Unconditional Cash Transfers as a Poverty Reduction Strategy in Africa' (2018) 33 World Bank Research Observer 259.

Hills J and Stewart K (eds) *A More Equal Society? New Labour, Poverty, Inequality, and Exclusion* (Policy Press 2005).

Hoddinott J et al, 'The Economic Rationale for Investing in Stunting Reduction' (2013) 9 Matern Child Nutr 69.

Holt B et al, 'Can Nurturing the Young Be the Key to Tackling Chronic Diseases in the Old? A Narrative Review with a Global Perspective' (2018) 18 The Ochsner Journal 364.

Hong R et al, 'Relationship Between Household Wealth Inequity and Chronic Child Undernutrition in Bangladesh (2006) 5 International Journal of Equity in Health 15.

Institute for Public Health Malaysia, *National Health and Morbidity Survey 2016 (NHMS 2016): Maternal and Child Health. Vol. II: Maternal and Child Health Findings* (2016).

--, *National Health and Morbidity Survey 2015 (NHMS 2015): Non-communicable Diseases, Risk Factors & Other Health Problems. Vol. II* (2015).

Khazanah Research Institute, *The State of Households 2018: Different Realities* (Khazanah Research Institute 2018).

--, *The State of Households II* (Khazanah Research Institute 2014).

Kidd S and Athias D, 'Hit and Miss: An Assessment of Targeting Effectiveness in Social Protection' (2019) Development Pathways Working Paper.

Kidd S, 'Poverty-targeting harms non-beneficiary children in the Philippines' (2018) Development Pathways <https://www.developmentpathways.co.uk/blog/poverty-targeting-harms-non-beneficiary-children-in-the-philippines/> accessed 10 July 2018.

KWSP, *Belanjawanku: Expenditure Guide for Malaysian Individuals & Families* (KWSP 2019).

Leroy JL et al, 'The Impact of Conditional Cash Transfer Programmes On Child Nutrition: A Review of Evidence Using a Programme Theory Framework' (2009) 1 Journal of Development Effectiveness 103.

Lim KK et al, 'Complete Immunization Coverage and Its Determinants Among Children in Malaysia: Findings From The National Health And Morbidity Survey (NHMS) 2016' (2017) 153 Public Health 52.

Lin A et al, 'Household environmental conditions are associated with enteropathy and impaired growth in rural Bangladesh' (2013) 89 Am J Trop Med Hyg 130.

Manley J et al, *How Effective Are Cash Transfer Programmes at Improving Nutritional Status? A Rapid Evidence Assessment of Programmes' Effects on Anthropometric Outcomes* (EPPI-Centre 2012)

Marini A et al, *Standing Tall: Peru's Success in Overcoming its Stunting Crisis* (World Bank 2017).

Marriott BP et al, 'World Health Organization Infant and Young Child Feeding Indicators: Associations with Growth Measures in 14 Low-Income Countries (2012) 8 Matern Child Nutr 354.

Milman N, 'Iron Deficiency and Anaemia in Pregnant Women in Malaysia – Still a Significant and Challenging Health Problem' (2015) 2 J Preg Child Health 168.

Ministry of Health, *Garis Panduan Penggunaan Buku Rekod Kesihatan Bayi dan Kanak-kanak (0-6 Tahun,) Kad Simpanan Klinik Dan Carta Pertumbuhan WHO (2006) Carta Lilit Kepala CDC* (MOH 2011).

--, *Garis Panduan Program Pemulihan Kanak-kanak Kekurangan Zat Makanan* (MOH 2010).

--, *Manual Perkhidmatan Kesihatan Ibu & Anak Bagi Anggota Kejururawatan di Perkhidmatan Kesihatan Awam* (MOH 2016).

--, *National Plan of Action for Nutrition of Malaysia III, 2016-2025* (National Coordinating Committee on Food & Nutrition 2016).

Naser IA et al, 'Association Between Household Food Insecurity and Nutritional Outcomes Among Children in Northeastern of Peninsular Malaysia" (2014) 8 Nutrition Research and Practice 304.

Owusu-Addo E and Cross R, 'The Impact of Conditional Cash Transfers On Child Health in Low-And Middle-Income Countries: A Systematic Review' (2014) 59 International Journal of Public Health 609.

Perumal N et al, 'Use and Misuse of Stunting as a Measure of Child Health' (2018) 148 The Journal of Nutrition 311.

Rabi A et al, 'Introducing and Costing a Child Grant in Malaysia: A Step Forward for Socially Inclusive and Economically Productive Malaysia' (2017) UNICEF Malaysia Working Paper Series WP/2017/002.

Ravallion M, 'Has Malaysia Virtually Eliminated Poverty?' <https://economicsandpoverty.com/2019/01/21/has-malaysia-virtually-eliminated-poverty/> accessed 25 January 2019.

Reinhardt K and Fanzo J, 'Addressing Chronic Malnutrition through Multi-Sectoral, Sustainable Approaches: A Review of the Causes and Consequences' (2014) 1 Frontiers in Nutrition 1.

Reynolds T et al, 'Review of Long-Term Impacts of Cash Transfer Programs' (2017) EPAR Technical Report 359.

Rokx C et al, *Aiming High: Indonesia's Ambition to Reduce Stunting* (World Bank 2018).

Sahoo K et al, 'Childhood Obesity: Causes and Consequences" (2015) 4 Journal of Family Medicine and Primary Care 187.

Sawaya AL and Roberts S, 'Stunting and Future Risk of Obesity: Principal Physiological Mechanisms' (2003) 19 Cadernos de Saúde Pública 21.

Sharif ZM and Ang M, 'Assessment of Food Insecurity Among Low Income Households in Kuala Lumpur Using the Radimer/Cornell Food Insecurity Instrument - A Validation Study' (2001) 7 Malaysian Journal of Nutrition 15.

Shukri NAM, 'Maternal Milk Supplementation Among Pregnant Women in Kuantan, Pahang' (2018) 2 International Journal of Allied Health Sciences 179.

Solomons NW, 'Malnutrition and Infection: An Update' (2007) 98 British Journal of Nutrition 5.

Spears D, 'How Much International Variation in Child Height Can Sanitation Explain?' (2013) World Bank Policy Research Working Paper 6351.

Sulaiman Z et al, 'Timing of Return to Work and Women's Breastfeeding Practices in Urban Malaysia: A Qualitative Study' (2018) 26 Health Soc Care Community 48.

Tan KL, 'Factors Associated with Exclusive Breastfeeding Among Infants Under Six Months of Age in Peninsular Malaysia' (2011) 6 International Breastfeeding Journal 1.

UNICEF Malaysia, *Children Without: A Study of Urban Poverty and Deprivation in Low-cost Flats in Kuala Lumpur* (UNICEF 2018).

UNICEF, *Improving Child Nutrition: The Achievable Imperative for Global Progress* (UNICEF 2013).

--, *Infant and Young Child Feeding - Programming Guide* (UNICEF 2011).

WHO Multicentre Growth Reference Study Group, 'Assessment of differences in linear growth among populations in the WHO Multicentre Growth Reference Study' (2006) Acta Paediatrica Suppl. 450.

--, *WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development* (World Health Organization 2006).

WHO, 'Global Health Observatory Data Repository' <http://apps.who.int/gho/data/node.main.ANEMIA1?lang=en> accessed 15 January 2018.

--, 'Indicators for Monitoring the Millennium Development Goals: Definitions, Rationale, Concepts and Sources' <http://mdgs.un.org/unsd/mi/wiki/5-5-Antenatal-care-coverage-at-least-one-visit-and-at-least-four-visits.ashx> accessed 15 January 2018.

--, 'The WHO Global Data Bank on Infant and Young Child Feeding Data Sources and Inclusion Criteria' < https://www.who.int/nutrition/databases/infantfeeding/data_source_inclusion_criteria/en/> accessed 15 January 2018.

--, *Training course on child growth assessment* (World Health Organization 2008)

Wong CY et al, 'Double-burden of malnutrition among the indigenous peoples (Orang Asli) of Peninsular Malaysia' (2015) 15 BMC Public Health 680.

World Bank Group, *Malaysia Economic Monitor, December 2018: Realizing Human Potential* (World Bank 2018).

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