MATERNAL AND CHILD DIET-RELATED FACTORS ASSOCIATED WITH STUNTING AND WASTING IN CHILDREN 6-23 MONTHS OF AGE IN INDONESIA

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Human Nutrition – Doctor of Philosophy

2017

ABSTRACT

MATERNAL AND CHILD DIET-RELATED FACTORS ASSOCIATED WITH STUNTING AND WASTING IN CHILDREN 6-23 MONTHS OF AGE IN INDONESIA

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Background: Undernutrition among children under-five years of age is a long-term major concern in Indonesia. Over 20 years, the prevalence of undernutrition in this target group only decreased by 7.3% from 44.5% in 1990 to 37.2% in 2013. The most common forms of undernutrition in Indonesian young children are stunting and wasting, strong predictors of mortality and morbidity among young children. Inappropriate dietary intake is postulated to be an important immediate risk factor for development of undernutrition as demonstrated in Indonesian children by a low rate of exclusive breastfeeding and poor complementary feeding, specifically relative to a high consumption of unhealthy snacks. Links between maternal and child dietary intake have been well documented in other countries, but not Indonesia and few have examined mother's dietary intake quality and weight status as well as the association of snacks with child nutrition status, which is critical for facilitating the efficacy of prevention and treatment of undernutrition among Indonesian young children.

Specific aims: The two Specific Aims of this study were: 1) to examine the relationship between mother's dietary intake quality and weight status and risk for stunting and wasting in children 6-23 months of age in Indonesia, and 2) to examine the relationship between child feeding practices, including unhealthy snack consumption, dietary quality, and risk for stunting and wasting in children 6-23 months of age in Indonesia.

Methods: The Indonesia Demographic and Health Survey (IDHS) of 2010 was used to assess maternal and child diet-related factors in association with stunting and wasting in children 6-23

months of age in Indonesia. The IDHS, conducted by The Ministry of Health every three years, included a single 24-hour dietary recall and anthropometric measurements from the targeted sample. Mothers' weight status was determined using body mass index (BMI). Dietary quality for the mothers was determined from the 24-hour dietary recalls using the minimum dietary diversity (MDD) score recommended by FAO in 2014. Stunting and wasting were defined as height-for-age z-scores (HAZ) and weight-for-height z-scores (WHZ) lower than -2 respectively. Child dietary intake data included breastfeeding (past and current) and complementary feeding (minimum dietary diversity score and frequency of unhealthy snack consumption) practices. Path model analysis was conducted using Mplus software.

Results: After data cleaning, there were 2,457 mother and child dyads. Stunting and wasting rates were 37.3% and 14.5% respectively. Mothers' BMI had direct a positive effect on stunting ($p = 0.05$). There was a significant moderating effect of mothers' MDD on child's unhealthy snack consumption relative to wasting status, but not stunting. Risk for child stunting was higher when breastfeeding was low (OR: 1.29, p-value < 0.05) and with a high consumption of unhealthy snacks (OR: 1.13, p-value < 0.05), while risk for wasting was lower with a high consumption of unhealthy snacks (OR: 0.80, p-value < 0.05).

Conclusion: The absence breastfeeding and a high consumption of unhealthy snacks were key independent factors associated with stunting in Indonesian children 6-23 months of age. High consumption of unhealthy snacks interestingly had a protective effect on wasting, while mothers' MDD moderated the association between child high consumption of unhealthy snacks and wasting status. Therefore, findings from the current study suggest that improving breastfeeding and complementary feeding practices of young children can enhance their nutritional status and have short- and long-term impacts on reducing stunting and wasting.

ACKNOWLEDGEMENTS

First, I would like to express my sincere gratitude to my advisor, Dr. Lorraine Weatherspoon, for the continuous support of my PhD study, for her never-ending patience, motivation, and immense knowledge. I could not have finished this dissertation without her remarkable help. I would like to thank the chair of my examination committee, Dr. Won Song, for her insightful comments and encouragement in all the time of research. I am also very thankful to the rest of my committee, Dr. Joseph Carlson and Dr. Robert Griffore for their valuable inputs and friendly support, which enriched the overall quality of this research.

I thank the Fulbright Foreign Program, Ministry of Higher Education Republic of Indonesia and John Harvey Kellogg Endowed Program in Human Nutrition and Health for providing funding support for my PhD study. I would like to acknowledge the Research and Development Agency, Ministry of Health Republic of Indonesia who gave access to the Indonesian Demographic and Health Survey (IDHS) data.

I thank Wenjuan Ma from CSTAT who helped me through the data analysis. I thank Sumathi, Julie, Amy, Dayeon and Sujin, who have provided great assistance for doing research and also for their warm friendship that helped me survive freezing Michigan.

Last, but not least, I thank my family in Indonesia and special thanks to my husband David and my children Dhiena, Dhavina and Driantama. I see the love of God through your sacrifice in allowing me to follow my dream. I just cannot thank you enough.

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CHAPTER 1 – INTRODUCTION

1.1 Background

The economy of Indonesia, a developing country in South East Asia, has been growing fast since 2008,[1] as evidenced by a five-year Gross Domestic Product (GDP) growth above 5%. [2] Governmental efforts to address the serious problems of child and adult undernutrition in the country have also been ongoing for over 30 years. However, undernutrition problems persist in almost every district in Indonesia. In 1990, there were at least 44.5% children under-five years of age with undernutrition. More than twenty years later, the government estimated that 37.2% of children under-five years had some type of undernutrition. [3] With a population of over 24.6 million children under-five years of age, Indonesia is touted to be one of ten countries in the world with the largest number of childhood wasting and stunting, the two indicators of severe undernutrition. [4] In 2013, more than 37.2% of children (9.2 million) under-five years of age were stunted, and 12.1% of children (3 million)[5] from the same age group were wasted.

According to the World Health Organization (WHO), undernutrition has been recognized as creating the highest burden of disease in the world (16% of all calculated disability-adjusted life years). [6] Nutritional status during the first years of life is *critical* because of the long-term ramifications into adulthood. The enduring effects of child undernutrition include increased risks for lower intellectual capacity compared to well-nourished children, decreased economic potential, and increased chronic diseases such as diabetes and cardiovascular disease in adulthood. [7–9] One of the immediate causes of undernutrition is poor dietary intake. [10,11] Thus assessing the quality of dietary intake and other risk factors of undernutrition of a targeted

population can facilitate early identification and potentially elucidate how to address problems before the negative impacts of undernutrition occur. Although growth faltering is typically assessed and reported primarily for children under the age of five years, this study adds insight to this aspect of the pediatric literature in that it focuses on children 6-23 months. This period is a critical window for growth and development during which a child is least likely to recover from the stunting impairment experienced as a result of severe undernutrition, even if nutrition improves after two years of age. [12] The 6-23 month age period is also the target age range for introduction of complementary feeding in conjunction, preferably, with continued breastfeeding, and if not appropriately implemented can have devastating implications. [13]

A mother's diet and weight status have been found to be significantly related to that of her child's from the pre-pregnancy period through that of caring for her young child. [14,15] It is however interesting to note that in contrast to the stunting and wasting problem among children under-five years in Indonesia, only 20.8% of women were chronically undernourished and 32.9% were overweight or obese in 2013. [5] To our knowledge, no study has been done in Indonesia to assess the link between dietary intake and weight status in mothers and stunting and wasting in their young children. The body of evidence shows that mother's dietary quality is usually complicated and determined by multiple factors including socio-demographic characteristics, healthy or unhealthy behaviors and has a both under-and-over-weight relationship with weight status. [16–19] Mother and child (6-23 months) intakes may vary particularly for nutrient-rich foods such as fruits and vegetables as shown in Bangladesh, Vietnam and Ethiopia. [20] In addition, measuring dietary intake for young children may be more challenging than that for adults because of the possibility of inaccurate reports from parents as

they may not know what foods the child eats when with caretakers other than the parents. [21] However, it is important to understand if and how dietary quality of mothers in this vulnerable population relates to that of their young children so that nutrition inconsistencies can be better identified to improve child nutrition status and health.

One of the major problems believed to be related to poor dietary intake among young children in Indonesia is poor feeding practices, which includes both poor breastfeeding and complementary feeding practices. [22–24] Exclusive breastfeeding was practiced less than 50% by mothers for infants below 6 months with a very high percentage (65%) also feeding their newborns unhealthy food or drink other than breast milk (such as honey and solid food) as early as the first three days after birth. [24] Less than 50% of children 6-23 months of age in Indonesia received complementary food from at least four food groups out of seven as recommended by WHO in 2007 [25], energy intakes were below 70% of that recommended for their age. [26] These poor feeding practices in Indonesian young children could be related to the occurrence of stunting and wasting. To our knowledge, there are no previous reports that specifically examined poor feeding practices relative to stunting and wasting in Indonesian children.

Another interesting aspect of poor eating behavior among Indonesian young children is frequent and unhealthy snacking, which includes ready-to-eat snacks sold by street vendors.[24] These kinds of snacks fulfilled, on average, 40% of the energy requirement for children 1-12 years of age in 2001 in addition to the fact that they are high in salt, fat, and sugar and can suppress the appetite and result in refusal to eat healthy foods. [24,27] A small cross-sectional study in the rural villages of West Java province, Indonesia that included 154 children 1-12 years of age, showed that the

more snacks were consumed, the lower the height-for-age z-score (HAZ) or the greater likelihood that they were stunted. [27] This finding showed that a high consumption of snacks might predict stunting. There were however, no studies that explored, if consumption of these calorie dense snacks is also related to wasting. Further investigation is needed to explain the nutritional value of these snacks and associations with stunting and wasting in children 6-23 months in Indonesia.

The goal of this project was to identify how mother's dietary intake and weight status and child feeding practices, specifically unhealthy snacks, are related to stunting and wasting among Indonesian children 6-23 months of age. The findings from this study helped identify specific aspects of diet-related predictors that could be used to promote healthy dietary practices among Indonesian young children, and potentially reduce or ameliorate the disproportionately high rates of stunting and wasting in this vulnerable group in Indonesia.

1.2 Specific aims

Specific aim 1: To examine the relationship between mother's dietary intake quality and weight status and risk for stunting and wasting in children 6-23 months of age in Indonesia.

Specific aim 2: To examine the relationship between child feeding practices, including unhealthy snack consumption and dietary quality and risk for stunting and wasting in children 6-23 months of age in Indonesia.

1.3 Significance

Undernutrition, particularly stunting and wasting, is a major public health problem in Indonesia primarily affecting children under-five years. [3] The high prevalence of undernutrition among these young children, which can impair their growth and development, underscores the importance of addressing early identification and timely prevention of this serious problem. Currently, children at risk for undernutrition are identified using anthropometric, clinical or biochemical assessments [28] and hence only those that already have impaired growth, development or body function are recognized. The conceptual framework for the determinants and impacts of undernutrition showed that inadequate intake of dietary nutrients was one of the key factors associated with undernutrition. [10] Thus assessing dietary intake of the targeted population is important.

The goal of this project was to identify how mother's dietary intake and weight status, child feeding practices, including unhealthy snack consumption, and quality of dietary intake are related to stunting and wasting among Indonesian children 6-23 months of age. *This research is important because the findings improve our ability to identify both maternal and child diet-related factors among children who are at risk for undernutrition, and to more accurately guide nutritional, behavioral, and/or feeding environmental interventions for these children and their families. Health educators and policy makers have a clearer idea of diet-specific shortcomings and needs, which need to be addressed in interventions aimed at reducing the prevalence of undernutrition in this vulnerable population in Indonesia.*

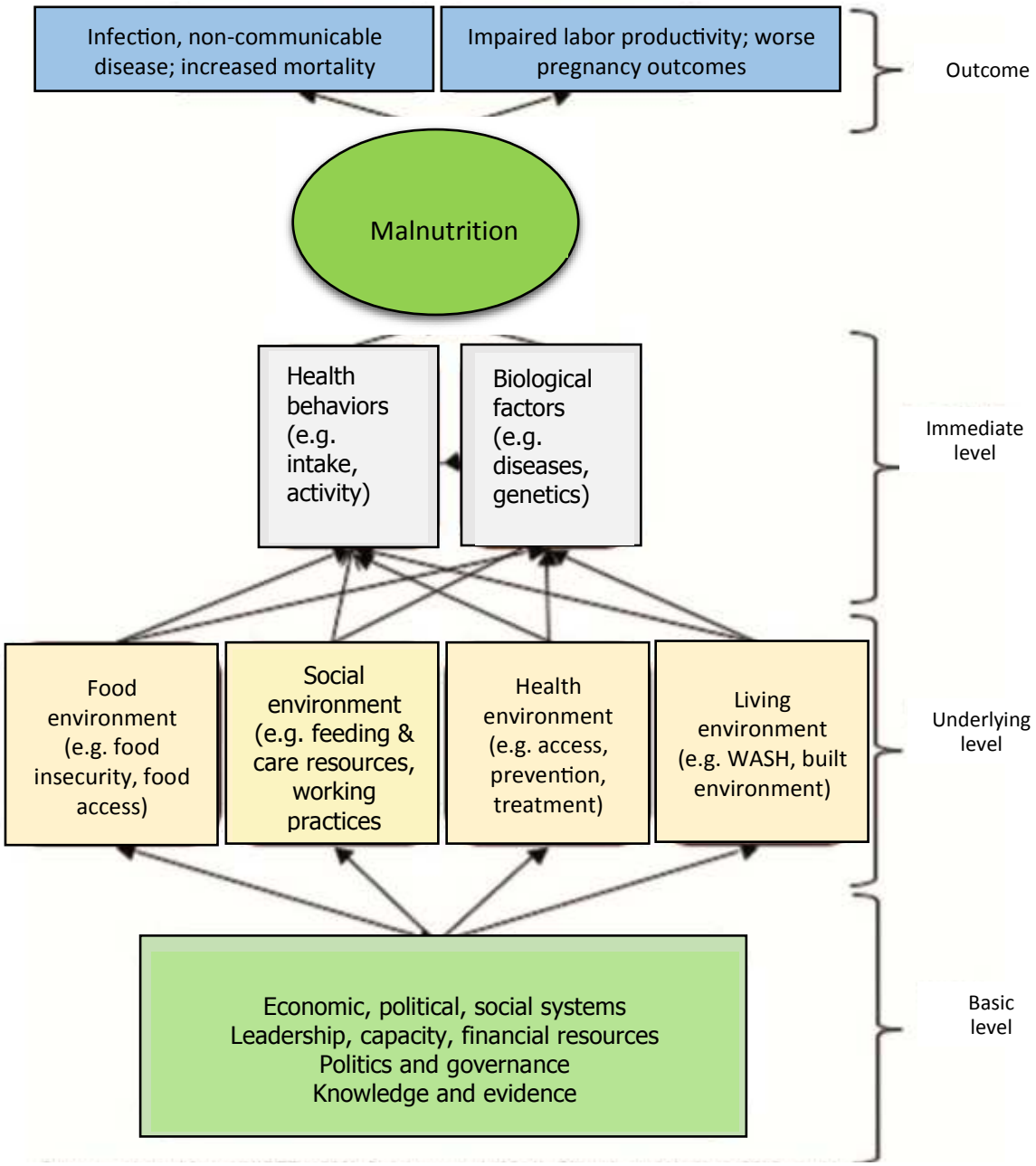
CHAPTER 2 – REVIEW OF LITERATURE

2.1 Overview of Undernutrition in Children

Nutritional status of children is the best global indicator of their well-being as it is closely related to overall standards of living and basic needs, such as access to food, housing and health care. [29] Undernutrition is defined as a condition when people do not get adequate calories, macro- and/or micronutrients for growth and maintenance from their diet or they are unable to fully utilize the food they eat due to illness. [30] Undernutrition occurs when intake of food overall or specific types of food are insufficient compared to body needs and is typically characterized as being underweight, stunted, wasted or as macro and/or micronutrient deficiencies. [12] Although factors affecting an individual's risk of undernutrition vary, populations with increased nutrient requirements such as children and pregnant/lactating women are especially vulnerable to unfavorable conditions. [12]

Figure 1 shows a conceptual framework of determinants of malnutrition [31] adapted from UNICEF. [11] As depicted in Figure 1, causes of malnutrition including undernutrition are multifaceted, comprising an interplay among the food, social, health and living environments. These in turn are further classified into immediate, underlying, and basic causal levels. Immediate causes operate at the individual level, underlying causes influence households and communities, and basic causes involve the structure and processes of societies. [31]

Figure 1. Conceptual framework for the determinants and impacts of malnutrition[31]



WASH: Water, Sanitation, and Hygiene

Source: (Haddad L, Cameron L, Barnett I. 2014 adapted from UNICEF 1990)[31]

The most significant immediate causes of undernutrition are inadequate dietary intake and disease. Infectious diseases, in particular, affect dietary intake and nutrient utilization which in turn increase the nutrition requirements. [23] For example, diarrhea in children decreases food intake by reducing appetite and causing nausea or vomiting. [23]Alternatively, inadequate dietary intake may enhance the susceptibility to disease especially for children with immature or impaired immune function. Undernutrition depresses the immune system in young children and increases risk for succumbing to infectious diseases. [32] On the underlying level, dietary inadequacies might be caused by insufficient food supply or inadequate care for children. These practices include child feeding, health maintenance efforts, and support during growth and development. [33] The other underlying factors of undernutrition, health environment and living environment, include concerns about utilization of health services; for example if the location of service is inaccessible, and/or expensive, low or no insurance coverage, inadequate or unsafe water supply and lack of sanitary facilities. [32,33] On the basic level, various factors such as economic, political and social conditions can lead to underlying and immediate factors and subsequently to undernutrition. [34] For example, in situations of civil unrest or war, food security and accessibility to care and health services may be impaired which in turn will increase the dietary inadequacy and disease susceptibility. [34] Given the complexity of the causes of undernutrition, this proposed study focuses on a segment of the immediate causes specifically adequacy and quality of dietary intake from both the maternal and child perspective for children 6 to 23 months of age.

During the early years of life, one of the stages of the life cycle when accelerated growth occurs, an adequate intake of energy and nutrient dense foods is imperative. [24] Those individuals who

consume inadequate food or have infectious diseases will not be able to attain their full genetic potential in growth and development. This is true for more than 170 million children globally who suffer from one or more types of undernutrition conditions such as stunting and wasting. [35] Worldwide, child undernutrition is disproportionately high in Asia with the proportion for stunting, underweight and wasting respectively reported as being 56%, 67% and 69% of all undernourished children in the world. [36]

2.1.1 Stunting

Stunting indicates a failure to attain optimal linear growth as a result of prolonged or frequent diseases and/or undernutrition. [28,30] Stunting is one of the major factors associated with morbidity and mortality in children under-five years of age. [37] Stunting, a hallmark of endemic poverty, is a reflection of chronic undernutrition. The global indicator used to define stunting is height-for-age z-score (HAZ) lower than -2. [28] Stunting may start as early as the fetal period and continue as a result of long-term undernutrition that occurs during the growing phases. The negative impacts of stunting are largely irreversible and often associated with intergenerational undernutrition. [9,38] A study in 2014 showed that stunting at 2 years of age negatively affects cognitive skills at age five even when the child has corrected growth. [39] In addition, stunted mothers had an increased risk of having stunted children. [40,41]

Of all children worldwide, 27% or 171 million were stunted based on data for 2010. [42] In other words, one in four of children in the world is impacted by long-term undernutrition. More than 80 developing countries have child stunting rates of at least 20%; among these 30 have rates of 40% or more. [43] This high level of stunting is associated with poverty and hence improvements

in national socioeconomic conditions are expected to decrease national stunting rates. [44] A decline of stunting occurred in Asia from 1990 to 2010 during which time rates were cut by 13% from 39.7% to 26.7%. [42] The decline was associated with an increase in socioeconomic conditions and, increased access to food, schools, clean water, sanitation and basic health care. [42] However, more than 50% of all stunted children in the world are still found in Asia. [28]

2.1.2 Wasting

Wasting is defined as weight-for-height z-scores (WHZ) lower than -2 while severe wasting is WHZ lower than -3. [28] Unlike stunting, this condition is caused by acute undernutrition. In most cases, it reflects a recent and intense process of weight loss that is frequently related to severe food shortage and/or serious disease. [44] Wasting is reversible when the child has adequate food intake and does not suffer from infectious diseases. [45] However, when it occurs repeatedly, wasting may prohibit linear catch-up growth over the long-term and promote stunting. [46] Almost 8% (51 million) and 3% (17 million) of all children worldwide are wasted and severely wasted, respectively. [28] A child with chronic undernutrition is more susceptible to acute undernutrition than well-nourished children when there are sudden or enhanced food shortages, economic crises, and other emergencies. [47] In infants, breastfeeding and complementary feeding can play an important role in wasting outcomes. [24] A recent study in Northern Ghana showed that adequate complementary feeding had a positive effect on WHZ. [48] Alternatively, breastfeeding was associated with a lower odds of wasting than that found in non-breastfed children. [49] Several other risk factors suggested in the literature for wasting are maternal short stature [50], presence of infectious disease [51], low dietary diversity [52], diarrhea [53], inappropriate complementary feeding [54], and intrauterine growth retardation (IUGR). [55] A study using demographic and health survey

(DHS) data across 54 countries with low to middle income showed that maternal stature was negatively associated with offspring's nutrition status including wasting. [50] Based on pooled analysis involving children 1 week to 59 months of age in 10 prospective studies in Africa, Asia and South America, it was found that infectious diseases such as respiratory tract infections and diarrhea were risk factors for wasting. [51] Data from seven DHS from developing countries in Africa, Latin America and Asia showed that dietary diversity was significantly associated with child nutrition status such as wasting. [52] Seven cohort studies in Peru, Brazil, Guinea-Bissau and Bangladesh which included 1,007 children showed that diarrhea was inversely associated with weight of the children. [53] A thorough review on complementary feeding that included 16 randomized clinical trials in developing countries and quasi-experimental studies showed that inappropriate complementary feeding leads to wasting. [54] As part of The Child Health Reference Group, a pooled analysis using 14 longitudinal birth cohorts from low- and middle-income countries such as: India, Brazil, Zimbabwe, etc, showed associations between IUGR and subsequent stunting and wasting in children. [55]

2.1.3 Underweight

A child is underweight when weight-for-age z-score (WAZ) is lower than -2. [28] As weight is a strongly associated with any level of undernutrition, underweight can usually be corrected by improving nutrition and health status. [43] Worldwide, about 16%, or 95 million children under-five years of age in developing countries are underweight with most of them living in Asia. [56] Globally, the proportion of children under-five years of age who were underweight declined by 11% between 1990 and 2014, from 25% to 14%. [56] This progress was made because of the commitment to fight hunger implemented by the government across countries. [56] Underweight

can include stunting alone, wasting alone or a combination of both. [12] Similar to wasting and stunting, being underweight is also a serious public health problem that has been associated with greater risk of death and disease. [57–59]

Risks for being underweight includes illness, food shortage, dry-season cultivation [60], male gender, older age, lower maternal education, a lower household income [61], lower frequency of complementary feeding, and diseases such as malaria and HIV. [62]

A cross-sectional study in 152 households with children under 5 years of age in Rukwa region, Tanzania, found that illness such as infectious diseases, food insecurity and dry-season cultivation were significant risk factors for being underweight. [60] Data from a cross-sectional study of rural areas in 10 provinces in China with a total of 84,009 children under 5 years of age showed that boys had lower mean WAZ-scores compared with their female counterparts with the assumption that the cause was increased bio-vulnerability of the male gender. [61] This study also found that older children, lower maternal education, and lower household income were other risk factors for being underweight. [61] Another study conducted in Tanga region, Tanzania among 748 children 6 months to 14 years of age found that being fed at a frequency below the recommendation of 5 times a day and infectious diseases were other risk factors for being underweight. [62]

2.2 Undernutrition in Children in Indonesia

In 2010, the population of children under-five years of age in Indonesia was more than 20 million. [63] The national level of stunting and wasting was 35.6% and 13.3% respectively (or 8.7 million children combined), which ranked Indonesia as the fifth largest with regard to stunted

children in the world. [63] In a study, where the South East Asian Nutrition Survey data was used, the researchers found that the overall prevalence of stunting in Indonesia in 2011 was 25.2% and 39.2% in urban and rural areas respectively, implying that rural locations were at greater risk for chronic undernutrition. [26] The variation for stunting is clearly depicted as 58.4% in the rural east in Nusa Tenggara province versus 22.5% in the western urban province of Yogyakarta. Out of a total 33 provinces in the country in 2010 (one has since been added), 15 provinces, which are all rural, had a prevalence of stunting higher by at least 0.5% than the national average. [3] The number of wasted children was more than 3.2 million with prevalence rates higher than the national average in 19 provinces [43], but the variation between provinces was not as variable as that for stunting, e.g. 20% in Jambi in the rural western part of the country and 15.8% in the east in Sulawesi. [3] Prevalence of child undernutrition was different across country, most of those who had high prevalence were located in remote areas with forestry or archipelagic regions and difficult access. [3]

Indonesia is one of the underperforming countries with regard to child nutrition relative to the national wealth. [35] Despite the rapid five year GDP growth above 5% [2], the stunting rate increased by 0.6% in 3 years from 35.6% in 2010 to 37.2% in 2013 adding more than 147,000 new cases of stunting. [5] This may be due to problems of limited food availability and inequality of food distribution among household members. [24] The global economic crisis in 2007-2008 resulted in increased food costs in Indonesia. [64] In 2008, the cost of protein-rich soy products rose by 50% with subsequent reduced purchasing power. [65] Another factor is food distribution within the home. Data from the IDHS 2010 showed unequal distribution of food between children and other family members. Children consumed lower amounts of calories than their

mothers and other family members relative to the Recommended Dietary Allowance (OR 1.34; 95%CI 1.06-1.69, P = 0.011), carbohydrates (OR 1.2; 95%CI1.03-1.61, P = 0.022), protein (OR 1.3; 95%CI 1.03-1.64, P = 0.026), and fat (OR 1.3; 95%CI 1.05-1.66, P = 0.016). [66]

Previous studies conducted in various regions in Indonesia found several risk factors associated with lower HAZ. In 2004, a study in North Maluku, a rural eastern part of the country, included 2,168 children 0-59 months of age. The authors found that older age, male gender, number of family meals per day ($\leq$ 2 times), and income at the lowest tertile were risk factors for lower HAZ. [67] Another longitudinal study in rural villages of West Java followed 318 infants from 18 weeks of gestation until at least 1 year of age. In the study, predictors of lower HAZ were low quality of housing, neonatal length lower than expected/normal, insufficient complementary food consumed, low maternal heights, and interestingly low fruit intake. [68]

Sari et al (2010) assessed the relationship between stunting and non-grain food expenditure at the household level using the Nutritional Surveillance System (NSS) in Indonesia that was implemented from 1999 to 2003. [69] This study included 446,473 children 0-59 months of age from rural and 143,807 from urban poor areas in Indonesia. They found that households in both areas that spent a smaller proportion of food expenditure on non-grain foods, in particular foods of animal sources were more likely to have a higher prevalence of stunted children. [69] Using the NSS dataset, Semba et al, 2011 assessed determinants of stunting among children 6-59 months of age. These authors found that maternal age $\leq$ 24 years, low maternal education status, child receiving deworming medication in the 6 month period prior to the survey, history of diarrhea in 7 day period prior to survey, father with smoking history, more than 4 individuals eating meals

from the same kitchen, and less weekly per capita household expenditure increased risk for stunting. [70] Semba et al (2011) also reported that risk of stunting decreased with consumption of fortified milk, consuming fortified noodles only in rural areas, older age group (24-59 months), tall maternal height, receiving vitamin A in the 6 month period prior to the study primarily in rural areas, improved household latrine that allows for the safe disposal of human excreta, use of iodized salt, and greater expenditure in households on plant and animal food. [70]

A cross-sectional study among children 1-5 years of ages in Cianjur rural district, a West Java province showed that the prevalence of stunting tended to be greater for children with low participation in Health and Nutrition Integrated Service Centers (called Posyandu) (46.4%) than in children with high participation (39.5%). [71] Posyandu is a community-based healthcare center which provides basic health services, such as family planning, mother and child health, nutrition (growth monitoring, supplemental feeding, vitamin and mineral supplementation, and nutrition education), immunization, and diarrhea disease control. Government subsidized service is conducted every month in every village level and mainly supported by volunteers from the surrounding villages with supervision from health providers from the sub district primary health center. [72,73] Children with lower participation were also more likely to be wasted (14.9%) than children with higher participation (8.4%) and the prevalence of wasting among boys tended to be higher than among girls in both high and low participation groups. [71] This might be partly explained by an increase of bio-vulnerability of the male gender, but the detailed mechanism needs further investigation. [61]

A study conducted with 80 children 6-60 months of age in 2 resettlement villages in the eastern

rural province of Nusa Tenggara showed that the WHZ improved significantly from a mean ± SD of -1.7± 0.9 in March (wet season) to -1.3±0.9 in November (dry season) ($p<0.001$). There were no significant changes in height between wet and dry seasons. Prevalence of wasting was 42% in March (dry season) and 19% in November (wet season) ($p<0.001$). [74] This high prevalence of wasting in the dry season and improvement in November suggests acute deprivation followed by an improved food supply. [74] In this rural area, the farming period is affected by climate changes between seasons thus during the dry season with minimum or no irrigation, farmers face challenges in planting. [74]

2.3 Factors Associated with Undernutrition in Children Under-five Years

2.3.1 Child Specific Factors

2.3.1.1 Dietary intake

2.3.1.1.1 Breastfeeding

Breastfeeding is the method of feeding a baby with milk directly from the biological mother's or other caretaker's breast. [13] The importance of breastfeeding is widely known. An optimal practice of breastfeeding may reduce child mortality by up to one million each year worldwide. [35] WHO recommends exclusive breastfeeding –that is feeding a baby only breast milk- for the first 6 months of life and feeding age-appropriate complementary foods with continued breastfeeding at least up to 2 years of age. [75] Data from the previous demographic and health survey in Indonesia (IDHS) in 2007 showed only 43.9% of Indonesian infants were breastfed within one hour after birth with exclusive breastfeeding as low as 32.4%. [23]

In Indonesia, giving food or drink other than breast milk for the first three days of life, also known as prelacteal feeding, is very common (65% of babies). [23] Most of pre-lacteal food or drink includes formula (66.5%), and 28.6% of babies receive honey. Additional food or drink is suggested mostly by health care providers such as midwives and nurses (54.3%); only 16.5% mothers make feeding choice by themselves. [24] This practice typically occurs due to the misunderstanding of the natural progression of lactogenesis where breast milk per se is preceded by colostrum and mothers report concern that "breast milk is not coming out" (51.1%), baby does not stop crying (23.35%), and that breast milk is perceived as insufficient to satisfy the baby (11.25%). [76] Most of the infants receiving formula milk are delivered in health care facilities such as hospitals, midwifery clinics or a maternity clinic where samples of formula milk are either given out, free, or sold. [24]

The marketing efforts by infant formula companies have hence likely contributed to decreasing breastfeeding in Indonesia. [76] Formula milk is frequently advertised on television and billboards as a superior food, which is nutrient dense. Health centers welcome the sales representatives who promote formula in their facilities. [24,76] Infant formula companies also gain new customers during emergency situations through free donations of formula following natural disasters such as the Yogyakarta earthquake in 2006 in the Indonesian western region during which time formula use increased (from 32% to 43%). [77]

Giving breast milk and formula interchangeably or just feeding formula is also very common in Indonesia (56.1%) since there is the perception that it is only poor mothers who do not give at least some infant formula to their babies. [24] Therefore, to increase social acceptance and decrease the likelihood of being stigmatized as "poor", mothers feel the necessity to appear to be "trendy". Formula introduction may also unfortunately result in early termination of breastfeeding. [24] Working moms also face another problem with regard to nursing their children since the maternity leave of 3 months is not adequate to support exclusive breastfeeding for 6 months as recommended by WHO (2015) [75], and there is a lack of breastfeeding-friendly workplaces. [24]

The Indonesian Minister of Health issued a decree on exclusive breastfeeding through 6 months in 2004, but the implementation is still limited. [76] Most of the breastfeeding programs are for health staff training in lactation management and immediate breastfeeding promotion, but some resistance from the staff has occurred with regard to implementation because of the perception that the activity requires extra time and resources. [24] Therefore, data that indicate the need to support breastfeeding programs will be helpful in addressing serious breastfeeding problems, especially among low income families.

2.3.1.1.2 Complementary feeding

"Complementary feeding is defined as the process from when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk". [13] Another definition from WHO was all solid, semi-solid, liquid food and drink given along with breast milk. [78] One of the primary strategies for overcoming nutrition problems, specifically stunting, is healthy complementary feeding. [24] For children 6–23 months of age, the appropriate feeding practice is to continue breastfeeding with semi-solid foods with adequate dietary diversity 2–4 times a day by including 4 or more food groups. [79] Complementary feeding is crucial as breast milk is no longer enough to meet the nutritional needs of the infant especially for iron, and could be associated with growth impairment as well as increased risk of disease and infection through unclean food and/or drink. [80]

In Indonesia, complementary food is typically given as early as 3 months of age [24], even though WHO recommends commencing at 6 months of age. [13] After the milk "comes in", mothers then breastfeed exclusively for 3 months, as this is the length of maternity leave for working mothers mandated by Indonesian law. They later go back to the workplace, where there is generally a lack of support for expressing, storing, and maintaining their milk supply. [76] Typically infant formula, regular cow's milk, and water will be introduced at 3 months of age. [24] In addition, other complementary food is also offered at about 3 months such as

fruit juice, porridge, smashed fruit, and honey. [24] All these practices reduce breast milk consumption.

Less than 50% of children 6-23 months of age in Indonesia received complementary food from at least 4 food groups as recommended by WHO in 2007 [25], and 23% of children 6-23 months of age had an energy intake below 70% of the Indonesian Recommended Dietary Allowance (RDA) for this age group. [26] Therefore, there is likely a strong association between complementary feeding and child nutrition status in this vulnerable age range.

Poor complementary feeding was defined as not following WHO (2007) recommendations for complementary feeding which are: 1) Introduction of complementary feeding at 6-8 months of age, 2) Minimum dietary diversity, receiving foods from at least four food groups within the last 24 hours, 3) Minimum meal frequency of complementary food at least 2 times a day for breast-fed infants 6-8 months of age, 3 times a day for breastfed children 9-23 months of age, and 4 times a day for non-breastfed children 6-23 months of age, 4) Minimum acceptable diet - children 6-23 months of age who received a minimum dietary diversity and minimum meal frequency during the previous day. [25] The determinants for poor complementary feeding among children 6-23 months of age in Indonesia were deemed as older age of child, poor household, lower education of mothers, illiterate mothers, lower likelihood of exposure to newspapers or magazines, lower television watching, rural residence, resident in

the Java and Bali regions in the western and southern part of the country, mothers who were no longer married, and female gender of baby. [25] These researchers conducted a secondary data analysis from IDHS in 2007 to assess complementary feeding practices and identify the potential risk factors associated with inappropriate complementary feeding in Indonesia using individual-level, household-level, and community-level factors.

A common complementary feeding practice in Indonesia is commercial instant "baby food" such as cereal and snacks. As many as 45-70% of children 4-5 months of age consume this type of food, alone or in combination with other foods such as home-made puree. [81] Sole consumption of instant baby food may increase risk for nutrient deficiencies since this type of food often contains high amounts of sugar, but lacks protein and micronutrients. [24] There is no regulation to fortify "baby food" in Indonesia with micronutrients such as iron. [82] Iron in the body stores at 6 months of age and the amount of iron in breast milk are no longer sufficient to meet the requirements of infants when they meet 6 months of age . [35]

2.3.1.1.3 Specific food group intake

Indonesian diets for children under-five years of age generally tend to be low in terms of energy, micronutrients, fatty acids, and protein content and bioavailability of micronutrients is often poor. [24,83] Children's diets mostly consist of non-fortified cereals with a small amount of vegetables and animal protein. [84]

As few as 23% of children 6-8 months of age had sufficient iron consumption due to a lack of variety in their intake measured by the dietary diversity score. [85] Relative to food group intake, snack foods are an interesting caveat of concern in the diets of young children. A study was conducted on children 1-12 years of age in a rural village of West Java in the western region of Indonesia using food recall surveys for all meals and snack foods consumed in 7 consecutive days for each subject. [27] In this study, snack foods were classified into: 1) modern snacks (2 kinds of salty chips made from flour), 2) Traditional snack foods (e.g., nuts or seeds; fried chips made from cassava, banana, or seed of *Gnetum gnemon*; sweets made from coconuts, sweet beans, flour or rice, and fritters), 3) candies and desserts; and 4) soft drinks (e.g., sweetened carbonated beverages and fruit drinks). These types of snacks often contribute to fat, salt and sugar intake, but lack essential nutrients such as vitamin and minerals. The mean percent contribution of snack foods was 59.6% for fat, 40.0% for energy, 20.6% for calcium, and <10% for vitamins A and C. Frequent and unhealthy snacking habits contributed to low diversity of children's diets. Frequent inappropriate snacking may suppress a child's appetite and prevent children from being receptive to more complete nutritious meals. [27]

2.3.1.2 Role of diseases

The leading cause of illness of children under-five years of age in Indonesia is infectious diseases such as acute respiratory infection, pneumonia, and viral gastroenteritis. [23] There is a clear correlation between infectious diseases and undernutrition. One of the common

symptoms associated with gastrointestinal infectious diseases in Indonesian young children is diarrhea which is mostly caused by rotavirus infection as a result of poor food hygiene practices. [86,87] Diarrhea rates were highest among children 12-23 months of age, which was 9.7% (The National Institute of Health Research and Development, 2013). This may be attributed in part to food contamination in conjunction with complementary feeding. [88] The most recent IDHS in 2013 combined the age groups under 6 months and 6-12 months of age when reporting diarrhea incidence. Solid food preparation definitely increases the chance of contamination compared to breastfeeding. [88] Diarrhea affects nutritional status in several ways: (1) reduced appetite, which leads to reduced dietary intake; (2) increased nutrient loss via frequency of defecation; (3) decreased intestinal transit time which leads to poor absorption of nutrients; (4) acceleration of basal metabolic rate which leads to increased protein catabolism. [89] The risk of stunting increases with frequent episodes of diarrhea. [90] Infectious diseases like diarrhea will reduce the nutrient absorption of the children and when it occurs repeatedly, it may prohibit linear catch-up growth over the long-term and result in permanent stunting. [46]

2.3.2 Maternal Factors

2.3.2.1 Mothers' dietary intake

The link between diet and nutritional status of a child and the mother is an important consideration. Studies in developed countries suggest that maternal dietary patterns influence children's diets. [91–93] Researchers in the United States of America (US), in a study among 98 low-income African-American mothers with children 6-18 months, found that maternal food intake was a positive correlate of child's food intake. [91] The

study found that the children's intakes of fruit, vegetables and snack foods were positively associated with maternal intake of each of these foods, respectively. [91] A longitudinal study in the US among low-income, African American adolescent mothers that followed children 13 months of age for 1 year of showed that maternal and toddler fruit, vegetable, snack, meat, dairy and soda intake were positively correlated. [92] Robinson et al (2007) conducted a prospective study in the United Kingdom (UK) among 1,434 infants 6 and 12 months of age and their mothers. They found that the key influence on the infant diet was the quality of the maternal diet. Women who complied with dietary recommendations overall were more likely to feed their infants comparable diets. [93] The mother's diet independently accounted for almost a third of the variance in the child's dietary quality in another study, also conducted in the UK. [15]

When nutrient rich foods such as fruits and vegetables are considered, the positive association between maternal and child (6-24 months) dietary quality was not however seen in developing nations such as Bangladesh, Vietnam and Ethiopia. [20] This multi-country study was done to examine agreement and association between maternal and child dietary diversity and identify determinants of maternal and child dietary diversity using mother-child dyads. A strong positive association was seen between maternal and child dietary diversity score, however the disagreement in mother/child intake for fruit and vegetables could be attributed to the fact that some mothers believe that vegetables and fruit are difficult to digest and can cause stomach illness or abdominal pain. [94] Also, lack of familiarity on alternative food preparation may lead to mothers not giving their children some traditionally prepared vegetables that contain spices, which are assumed to

be too spicy for young children. [95] It is not known if this lack of association for fruits and vegetables is also the case for Indonesia.

2.3.2.2 Mothers' anthropometric measurements

Regarding growth of the child, maternal height is an important determinant of children's HAZ. [96] A study in Indonesia found that lower maternal height was a positive predictor of lower HAZ among infants up to one year of age, [68] while higher maternal height appeared to be protective of low HAZ in children 6-59 months of age. [70] The biologic plausibility more likely includes genetic and non-genetic factors, and may involve nutrition-related intergenerational effects on growth and the mechanics of a reduced space for the fetus to grow. [40,97] There are also socio-cultural factors such as the intergenerational transmission of poverty that influences dietary intake for both mother and child, which may be related to anthropometric status for both. [97]

Intra-uterine Growth Retardation predicts individual final height as shown in a longitudinal study in France. [98] This study included full-term singleton subjects born with IUGR matched with their non-IUGR counterparts. Heights were measured before and after puberty. A significant deficit in final height was found in those who had IUGR compared with the non-IUGR subjects ranging from -4.0 cm for males and -3.6 cm for females.

Researchers investigated a subsample of the Early Childhood Longitudinal Study-Birth Cohort, which was a national sample of US children born in 2001 and found that IUGR is

a risk for stunting at age of five years. [99] Additional risk factors included inadequate weight gain in the mothers who smoked during pregnancy and mothers who were short. [99]

A review paper reporting findings from studies in different countries (Brazil, Guatemala, India, the Philippines and South Africa) indicated that IUGR was associated with shorter height in the mothers. [100] Subjects were recruited before pregnancy in India, during pregnancy in the Philippines and South Africa, and at birth in Brazil and Guatemala. Outcomes were measured in adolescents in South Africa and in adults in the other sites.

Schmidt et al also found that maternal weight was a predictor of WHZ scores among children 12-15 months of age. [68] The researchers followed newborn infants from 9 rural villages in West Java, Indonesia until 12-15 months of age and found that lower maternal weight predicted lower WHZ and vice versa. [68]

2.3.2.3 Mothers' socio-demographic characteristics

Several maternal socio-demographic factors may influence the diet and nutritional status of children. This is true for both developed and developing countries. These include race/ethnicity, age, educational status, and type of employment. A recent study in the US showed that dietary patterns of children varied according to the racial, ethnic and educational backgrounds of their mothers. [101] At 12 months, infants of mothers who had low education or who were non-Hispanic African American mothers (compared to non-Hispanic white) had a higher score on unhealthy dietary patterns. Semba et al conducted a study in Indonesia using data from the Nutritional Surveillance System in Indonesia

from January 1999 to September 2003 for children 6-59 months of age. This survey was done to monitor public health problems and guide policy decisions. They found that maternal age ≤ 24 years and maternal low education were risk factors for low HAZ scores in children. [70]

Researchers who conducted a community case control study in South Ethiopia among children 24-59 months of age, found that children whose mothers worked as merchants (Adjusted OR = 4.03, 95% CI: 1.60-10.17) were more likely to be stunted than children whose mothers were housewives. [102]

In contrast, a study in Vietnam in 2007, which used a cross-sectional survey among 607 mother-child (0-59 months) pairs found that the children of mothers who were farmers or housewives were at greater risk for both stunting and wasting compared to when mothers were civil servant officers. [99] In different a study in the mountainous region in Vietnam, mother's education of primary school or lower was a risk factor for stunting, but not wasting when compared to mother's education of senior high school or higher. [103]

In Indonesia, the high rate of female labor force participation which was 54% of the female population 15-64 of age from 2006 to 2015 may influence the relatively high rate of stunting among Indonesian children under-five years of age. [104] A survey in a low-income community in the urban part of Indonesia showed that the children of non-working mothers had significantly higher HAZ scores than those of working (all types of employment) mothers. [105]

2.4 Implications of Undernutrition in Children Under-five Years

Each year, at least 2.6 million children die or more than a third of all deaths are associated with undernutrition in the world. [35]

Any degree of undernutrition contributes significantly to mortality. [106–108] Undernutrition can depress immune systems in young children and increase their susceptibility to infections and in many instances to death from common illnesses such as pneumonia, diarrhea and malaria. [29,35] Compared to their well-nourished counterparts, children with undernutrition are hence up to 10 times more likely to die from an easily preventable or treatable disease. [37]

In addition, early life stage undernutrition, may interestingly also increase risk for overweight or obesity as well as some types of diet-related chronic diseases such as diabetes and cardiovascular disease at a later age. [9,109] The underlying mechanism is unknown, but it may involve links between weight status in childhood and body composition in later life. [110] Children who were thin at birth or early childhood, but experience a rapid weight gain after late childhood have a predominantly increased fat mass. [111,112] Both undernutrition and overweight/obesity in utero and early childhood have been shown to be associated with increased risk for diet-related disease later in life. [114-116]

Growth failure or more specifically stunting, during the first two years of life is irreversible and will continue to exhibit itself in the form of a compromised height through adulthood as well as potentially impact the birth weight of the next generation. [9,38] The biologic plausibility includes

genetic and non-genetic factors, involving nutrition-related intergenerational effects on growth and the mechanics of a reduced space for the fetus to grow. [40,97] There are also socio-cultural factors such as the intergenerational transmission of poverty that influences dietary intake for both the mother and child. [97]

Attained height in adolescence and adulthood has a potential to serve as a proxy measure for several things including the following: an adolescent's social skills [113], adult cognitive ability [114,115], adult social class [116] or adult health in general. [117] Height in turn is an indicator of health and nutrition in early childhood, which effects on cognitive development. Combined with the childhood environment, cognitive development affects educational attainment, which can later affect occupational choice and income [115] as shown in the conceptual framework for malnutrition if Figure 1. [31]

More specifically undernutrition during childhood is associated with lower test scores, decreased productivity and hence also with reduced adult income. [9,118] Undernutrition has been shown to be associated with reduced dendrite density in the hippocampus of the brain, which is responsible for long-term memory, and likely impacts test performance. [119] From a productivity perspective, long-term consequences of these neurological effects have been shown in adults. Adults with a history of being undernourished as children have low scores on tests of attention, vocabulary, non-verbal cognitive ability and working memory. [9,118,120] This likely impacts the type of employment and hence earning capacity. An estimated 20% loss on earning occurs for adults in developing countries who were undernourished as children compared to those who were well-nourished [35]. The direct cost of child undernutrition worldwide is $20 to $30 billion per year. [105]

2.5 Nutrition Programming in Indonesia

The Indonesian government has been engaged in nutrition intervention efforts for over 30 years with a focus on protein energy malnutrition, vitamin A deficiency, iron deficiency anemia and iodine deficiency disorders. [73,121] The Ministry of Health is currently undertaking a national program called Community Management of Acute Malnutrition to Manage Wasting and Underweight specifically for children since the national level of child undernutrition is still high. With this program, local health centers provide 90 days of supplemental food (fortified cookies and milk or sometimes sachets of packaged, fortified complementary food) to children diagnosed with wasting or are underweight. Children 6-59 months of age are screened using a growth card distributed at local community health centers. Diagnosis is made if the WHZ or WAZ scores are below -2. [122] Another national program called *MP ASI* (Food Supplementing Breastfeeding) is also being administered by the Ministry of Health to enhance nutrition in children under-five years from poor families. For this program, all children 6-59 months of age who visit local community health centers for monthly growth monitoring receive the food supplementation made from local food. [122] However, the coverage of this program is low and it has not been shown to be successful in those in greatest need. [123] The government of Indonesia also has a program that distributes rice to poor families (RASKIN). The goal of this program is to allocate 20 kg of rice to 9 million poor households across the country per month, but this program has also not been well delivered. [24]

From the nutrition education perspective, a government program called *Keluarga Sadar Gizi* (Nutritionally Aware Families) is a campaign to improve nutrition behaviors among families

with children. [122] The objectives include monitoring growth of children, under-five years, promoting exclusive breastfeeding for 6 months and continuing to 2 years, encouraging consumption of a variety of food in adequate amounts using the Indonesian food pyramid as a guide, interesting the use of iodized salt and administering a high dose of vitamin A twice a year for children aged 6 months to 5 years in local community health centers by nurses. The monitoring for this program is however somewhat not clear. [122] Micronutrient programs by the Indonesian government are twice-yearly vitamin A supplementation for children under-five years of age at community health centers, and fortification of flour with multi-micronutrients, oil with vitamin A, and salt with iodine. [24]

Government programs which specifically promote maternal nutrition are very scarce. The only current ongoing national programs available are supplementation of iron and folate during ante-natal care and post-partum supplementation of vitamin A. These two programs however are underutilized. [124]

There are some complementary feeding promotion programs conducted by the United Nations (UN) and non-government organizations (NGOs). Examples include CARE's efforts to improve breastfeeding and complementary feeding in the rural province of Nusa Tenggara Timur, and the Mercy Corps program to raise awareness and support mothers to practice and promote exclusive breastfeeding in the urban province of Jakarta and the rural province of Maluku. [24] Unfortunately, these programs are only local and, not national. [24]

Although the Indonesian government remains committed to nutrition intervention efforts, the

scope and magnitude of success of nutrition programs have unfortunately been limited warranting the need for continued and enhanced efforts. This is especially true from a maternal perspective as well as the need to identify areas and facilitators to success. Multiple level policy systems and environmental changes are needed. Findings from this dissertation add to the body of literature regarding maternal and infant nutrition challenges that need to be addressed.

CHAPTER 3 – METHODS

The current research project is guided by the Human Ecological Model. [125] This model was selected because it represents the multilevel depiction of factors described in the literature review that can impact child nutrition status. The human ecological model also fits in well with the conceptual framework for the determinants of malnutrition as shown in Figure 1 earlier by Haddad 2014 and was adapted to reflect both (Figure 2). At the core of the model is child nutrition status, which is first impacted by individual factors such as birth weight, health status, psychological factors, genetics; family (parent/s and household factors); and community (e.g. food accessibility, safety and health services). These are all in line with the Conceptual Framework for the Determinants of Malnutrition as shown in Figure 1 earlier.

Figure 2. Adapted human ecological model of child nutrition status [31, 125]

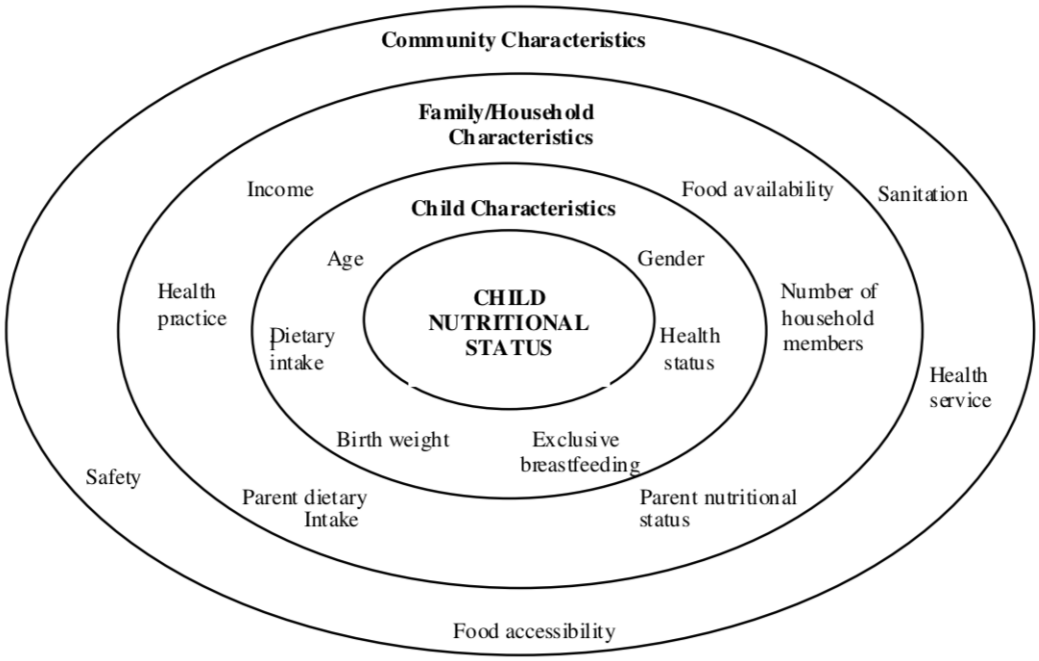
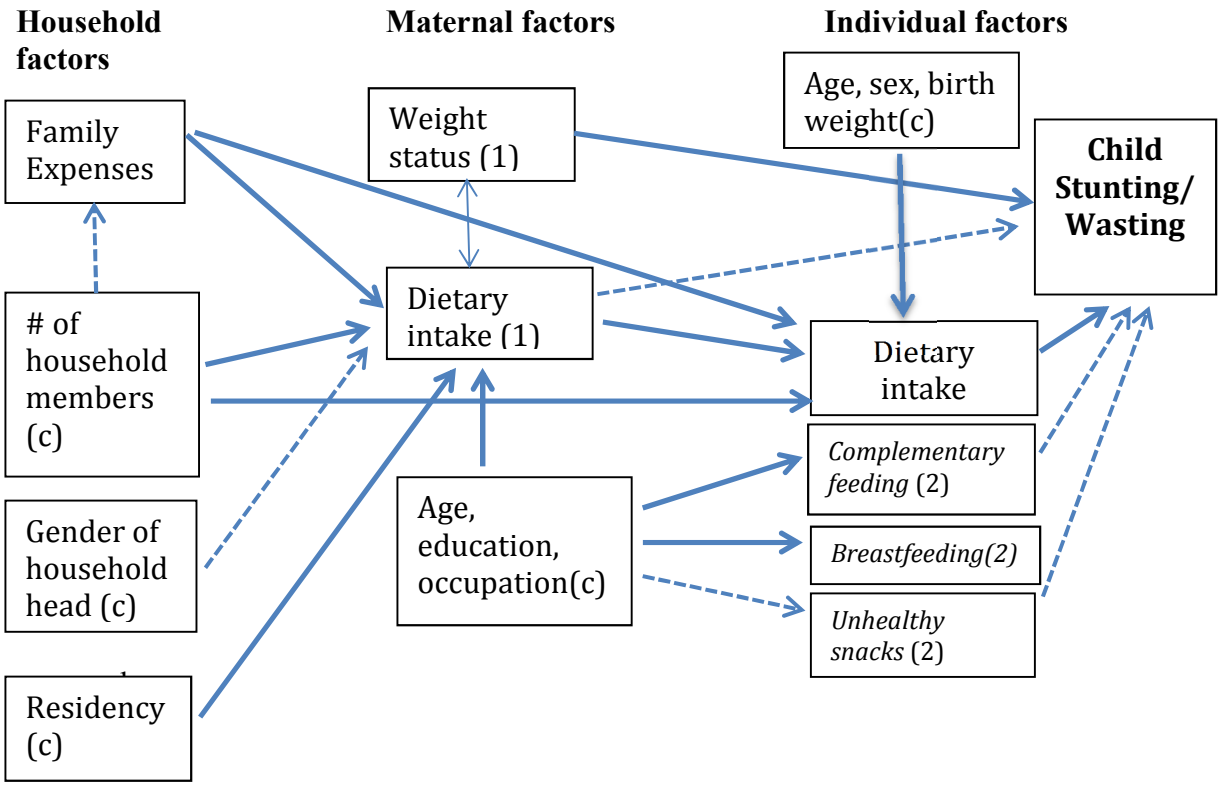


Figure 3 depicts a proposed model of the postulated interplay of the purported factors presented in Figure 2, which could influence child nutrition and child nutritional status in Indonesia.

Figure 3. Conceptual framework for factors that influence child nutrition status (stunting and wasting) [126]



Legend: Arrows represent cause-and-effect relationships; the solid lines represent well-known relationships, dotted lines represent probable relationships
C = covariates; 1= Specific Aim 1; 2= Specific Aim 2

Source: Patrick and Nicklas, 2005 [126]

The significant immediate factors that influence child stunting and wasting, especially for young children, are classified as child's dietary intake that includes complementary feeding,

breastfeeding and consumption of unhealthy snacks. Maternal factors including mother's dietary intake were hypothesized to have indirect effects on child's dietary intake (Specific Aim 1). Child's dietary intake as a whole is widely known to have a direct effect on child stunting and wasting. However the specific child dietary intake components such as breastfeeding and complementary feeding practices (Specific Aim 2) relative to child stunting/wasting have not been studied for this target population.

3.1 Dataset

The data used in this study was drawn from the Indonesian Demographic and Health Survey (IDHS) in 2010. The survey was conducted by The Ministry of Health in all 33 provinces of Indonesia, and aimed to evaluate the extent to which Indonesia was achieving the WHO Millennium Development Goals. [3] These goals specifically include: 1) eradicating extreme poverty and hunger, 2) achieving universal primary education, 3) promoting gender equality, 4) reducing child mortality, 5) improving maternal health, 6) combating HIV/AIDS, malaria, and other diseases, 7) ensuring environmental sustainability, 8) developing a global partnership for development. Multi-stage sampling was used with the sampling frame taken from the National Census conducted by the National Statistical Bureau in 2010. Every district/city that was included in the sampling frame had a number of proportional census blocks representing the number of households in a related district/city. There was total of 2,800 census blocks from 441 districts/cities. The possibility of a census block to be included in the sample within the district/city was proportional to the number of households in a district/city (probability proportional to size). From every chosen census block, 25 households were randomly selected. All members in the chosen household generated the individual samples.

The data set provides a valuable and effective source of data for mother and child nutritional information from a representative national household sample of 69,300 households. The data collection was based on two main questionnaires: the Household Questionnaire and Individual Questionnaire. Copies of both the Indonesian and English translated version of the questionnaire are included in Appendices 3 and 4 respectively.

Although human subject approval was not required due to the fact that the IDHS data set is viewed as public information and deemed automatically exempt, approval was electronically obtained from the IDHS administrators (Appendix 1).

Data in the Household Questionnaire included: a) location information (11 variables), b) household information (4 variables), c) data collector information (6 variables), d) household member information (13 variables), e) health service facility (18 variables), f) sanitation (20 variables), g) household expenses (39 variables). Data in the Individual Questionnaire included for each member in the household : a) subject identification (4 variables), b) history of communicable diseases: malaria (10 variables) and lung tuberculosis (9 variables), c) knowledge and attitudes (22 variables), d) reproductive health which consisted of: female reproductive information (6 variables); fertility information (11 variables); family planning (8 variables); pregnancy/delivery/post-partum period information (41 variables); abortion and unwanted pregnancy (10 variables); sexual behavior (6 variables), e) child health information which consisted of: infant and under-five children health information (22 variables), breastfeeding and complementary feeding (10 variables). In addition to data from these 2 questionnaires, data included 24-hour dietary recalls for each dyad, anthropometric measurements for each dyad, and biomedical examination (7 variables) for a selected subsample of households. Biomedical data

was collected for a sub-sample from 2,800 census blocks that represented the national population, which was 823 census blocks. For every household that was selected for biomedical testing, each member had a blood test for malaria and all members who were 15 years or older also had a sputum test for lung tuberculosis.

Trained data collectors interviewed the household head or other adult member in the household who provided information for the household questionnaire. All individuals who were 15 years or older were interviewed for the individual questionnaire. Children under 15 years of age or unhealthy family members were represented by other household members who identified as the primary caretaker.

Anthropometric measurements were done in accordance with WHO standard by trained data collectors. [127] Height was measured using a measuring board (brand "Multifungsi") which was placed on a flat, stable surface such as a table. For all children, length was measured in the supine position with the child's eyes looking straight up (recumbent). For mothers, height was measured while standing upright with eyes looking straight ahead. All measurements were done without shoes to the nearest 0.1 cm. Weight was measured to the nearest 0.1 kg with light clothing using a digital scale (brand "AND"), which was calibrated every day. The scale was placed on a flat, hard, even surface such as a tile floor without carpet. Child's weight was measured with the mother carrying the child then subtracting the result from the mother's weight without the child. It was a single measurement.

In this IDHS, 99.1% of the 69,950 households and 251,388 individuals were successfully interviewed, which comprised 94.3% of 266,510 eligible individuals. Eligible individuals were all members in selected households.

3.1.1 Study Sample

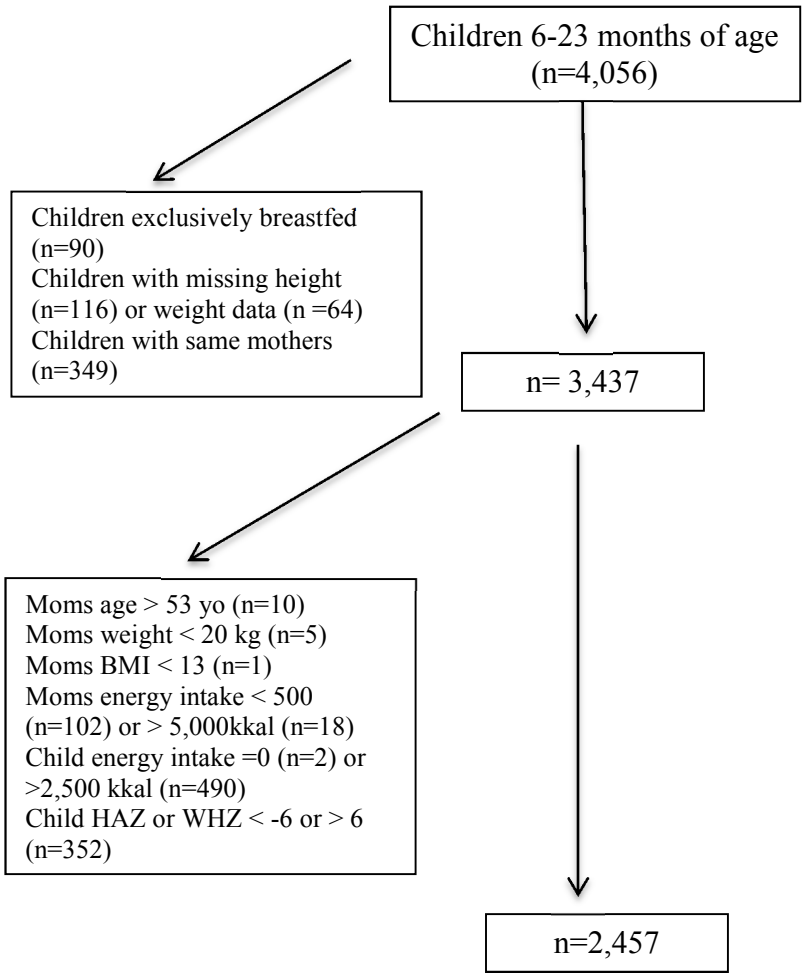
Children 6-23 months of age were included if measurements of weight, height and dietary intake were also obtained and plausible with that of their mothers. Of specific interest was child-mother or primary caregiver dyad for the purpose of this study. All of the caregivers were mothers when initial descriptive analyses were run. A total of 4,056 mother-child (6-23 months of age) dyads were identified; 1,599 (39.4%) were excluded when: the child was exclusively breastfed (n = 90), since they would not have complementary feeding information, the mothers could not be matched (n = 349), some values were implausible (n = 980) such as mother's age was not biological possible to have children under 2 years of age, mother's weight or BMI were too small, mother's energy intake was < 500 kcal or exceeded 5,000 kcal, child's energy intake was 0 or > 2,500 kcal, child's HAZ or WHZ <-6 or > 6 (Figure 4), and child had missing weight/height data (n = 180). The final sample size after data cleaning was 2,457 mother-child dyads (Figure 4).

3.1.2 Steps in Data Preparation

After cleaning the data, variables were selected based on the specific aims including the covariates. Data were then translated to English from Indonesian and assigned new variable names with explanatory labels. Creating new variables such as: mothers' BMI based on mothers' weight and height; child's HAZ and WHZ based on child's height and weight, child

was currently being breastfed or not based on the 24-hour dietary recall. Then categories of continuous data were created including categorizing the household expenses into 3 groups of low, medium, high, based on tertiles; number of household members into 2 groups of $\leq$ 4 and > 4 persons; mothers' age into < 20, 20-29, 30-39, $\geq$ 40 years; education into <6, 6-11, $\geq$ 12 years; mothers' occupation as stay at home or working mothers; mothers' BMI into <18.5, 18.5-22.9, 23.0-27.4, $\geq$ 27.5, child's age into 6-11, 12-17, 18-23 months, birth weight into very low birth weight (< 2,000 g), low birth weight (2,000-2,499 g), 2,500-2,999, 3,000-3,499, $\geq$ 3,500; mothers and child's mean dietary diversity scores (MDD) into adequate versus not adequate; mothers' energy intake into low, medium, high based on tertiles, initial breastfeeding into $\leq$ 1 and > 1 hour; introduction of complementary feeding into < 6 and $\geq$ 6 months; and consumption of unhealthy snacks into low, medium, high based on tertiles. The weighting factor included in the dataset was activated before do the analysis.

Figure 4. Flow chart of study sampling



3.2 Variable Definition and Operationalization

3.2.1 Primary Variables of Interest

3.2.1.1 Child Nutritional Status

The heights (length) and weights of each child in centimeters were transferred into WHO Anthro Plus software version 3.2.2 (WHO, 2011). This software was used to calculate the HAZ and WHZ scores of the study population based on WHO standards. [127] The HAZ and WHZ scores were depicted as standard deviation (SD) units from the median of the reference population. Children with scores of < -2 SD units below the

median height-for-age of the reference population were considered short for their age (stunted) and children with scores < -2SD units below the median weight-for-height of the reference population were classified as wasted. The reference population was taken from the WHO multicenter Growth Reference Study (MGRS) in 1997-2003. The children in this population were healthy children living under conditions likely to favor achievement of their full genetic growth potential and coming from different several countries: Brazil, Ghana, India, Norway, Oman and the USA. [127]

3.2.1.2 Maternal Nutritional Status

Mother's weight status was determined by using the classification of adult weight status for Asian populations based on WHO determined cut points for body mass index calculated from the weights and heights reported in the database: BMI < 18.5, 18.5-22.9, 23-27.4, and $\geq$ 27.5 for underweight, normal, overweight and obese categorization respectively. [128] BMI was calculated as weight (in kilograms) divided by height squared (in meters).

3.2.1.3 Maternal Dietary Intake

Maternal dietary intake quality was determined from single 24 hour recall data in the IDHS. Data was coded into food groups in order to calculate minimum dietary diversity (MDD) scores for women (MDD-W) as recommended by the Food and Agriculture Organization (FAO) in 2014. [129] This score (MDD-W) provides a global dietary diversity indicator for women, especially those from less developed countries [129]. The food groups were categorized as follows: 1) all starchy staple foods, 2) beans

and peas, 3) nuts and seeds, 4) dairy, 5) flesh foods, 6) eggs, 7) vitamin A-rich dark green leafy vegetables, 8) other vitamin A-rich vegetables and fruits, 9) other vegetables, 10) other fruits. This 10 food group method was chosen because it had a stronger relationship to micronutrient adequacy than other with different groupings. [129] The response options were "consumed" (score=1) or "not consumed" (score=0). The MDD-W was a simple sum of the scores for 10 categorized food groups and thus ranged from 0 to 10. An adequate MDD-W is defined as mothers consuming at least 5 food groups according to FAO. [129]

MDD-W was classified dichotomously as adequate versus not adequate for further analysis. Calorie intake from the IDHS was taken into account in analyzing the mothers intake. Chi-square tests were performed to assess the relationship between MDD-W and calorie intake. The calorie intake is important because it is a proxy of the household food security. [129]

Mother's weight status was determined by using the classification of adult weight status for Asian populations based on WHO determined cut points for body mass index calculated from the weights and heights reported in the database: BMI < 18.5, 18.5-22.9, 23-27.4, and $\geq$ 27.5 for underweight, normal, overweight and obese categorization respectively. [128] BMI was calculated as weight (in kilograms) divided by height squared (in meters).

3.2.1.4 Child Feeding Practice

The child feeding practices were assessed using the latest recommendation by WHO in 2010 which applied to children 6-23 months of age based on 24-hour recall data and are described as follows:

1. Early initiation of breastfeeding: children born in the last 24 months who were put to the breast within one hour of birth.
2. Introduction of solid, semi-solid or soft foods: infants who received solid, semi-solid or soft foods at 6-8 months of age.
3. Children ever breastfed: children born in the last 24 months who were ever breastfed. Breastfeeding was deemed the method of feeding a baby with milk directly from the biologic mother's or other care taker's breast.[13]

In addition to the complementary feeding practice, the current status of breastfeeding was also assessed, defined as children within the last of 24 hours who received any breast milk.

3.2.1.5 Child Dietary Quality

Child dietary quality was measured as minimum dietary diversity scores (MDD) and unhealthy snack consumption. Minimum dietary diversity (MDD) pertained to children 6-23 months of age who received foods from four or more food groups within the past 24 hours. Seven food groups were used in this calculation as recommended by WHO:

a. grains, roots, and tubers
b. legumes and nuts

c. dairy product (milk, yogurt, cheese)

d. flesh foods (meat, fish, poultry and liver/organ meats)

e. eggs

f. vitamin-A rich fruits and vegetables

g. other fruits and vegetables

The 7 food groups have been identified based on research showing the critical importance of each in the complementary feeding diet. [78]

Unhealthy snacks in the IDHS were defined as ready-to-eat snacks consumed at any time during the specific age period. These unhealthy snacks did not include fresh fruit and vegetables, but those which are usually high in salt, fat and sugar, while low in micronutrient content.

Unhealthy snack food groups were Indonesia specific and classified according to Adair and Popkin [129] and Sekiyama et al [27] to include: 1) modern snacks (e.g. stick cheese, cheese balls); 2) traditional snacks (e.g. sweets made from coconuts, flour or rice; and fritters); 3) candies and desserts; 4) soft drinks (sweetened carbonated beverages and fruit drinks). Child intake of unhealthy snack food groups was categorized into 3 groups: low, moderate, or high based on intake tertiles among subjects.

3.2.2 Covariates

Factors that could influence stunting and wasting in children 6-23 months of age as

described in the literature review and provided in the dataset were included in the model as covariates. These included: child's age, gender, birth weight, maternal and household factors. Maternal factors included: mother's age, years of education, and occupation. Mother's age was categorized into < 20 years, 20-29 years, 30-39 years, and ≥ 40 years to better capture younger and older mothers. Years of education was classified as < 6 years, 6-11 years, and ≥ 12 years in accordance with the education system in Indonesia that has elementary, middle/high school then college and above. Mothers' occupation was classified as stay at home or employed. Household factors included socio-economic status, gender of household head, number of all household members, and area of residency (rural versus urban). Household socio-economic status was based on average household total expenses per month, which was classified into 3 groups: low, medium and high based on expense tertiles among households to better capture the difference between groups. Total number of all household members was classified into less or equal to 4 persons and more than 4 persons based on the recommendation of having a maximum of 2 children per family by the National Family Planning Coordinating Board in Indonesia to promote the national birth control program. [3]

3.3 Statistical Analysis

Descriptive analyses were conducted to examine the socio-demographic characteristics of the study samples. The prevalence of child stunting and wasting categories was estimated across different explanatory variables, and the chi-square test was used to test the statistical significance. Participants' characteristics were described using weighted frequency distributions consistent with survey sampling. Weighting scores were included in the dataset as a variable.

Dependent variables were first treated as dichotomous thus logistic regression was used to assess the association between child's stunting and wasting categories to mothers MDD-W and weight status. Multivariate linear regression was used to examine this association for all children 6-23 months of age treating child's actual height and weight as continuous variables. Both logistic and linear regression models controlled for covariates.

The major conceptual limitation of all regression techniques is that one can only ascertain *relationships*, but never be sure about underlying *causal* mechanisms [131]. The techniques also require some conditions to avoid biased and/or inefficient estimates such as: 1) every variable is measured at the interval-ratio level, each independent variable has a linear relationship with the dependent variable, independent variables do not interact with each other and independent variables are uncorrelated with each other. [130]

As a combination between Specific Aim 1 and 2, a path model analysis was used to identify specific factors associated with stunting and wasting in children 6-23 months of age in Indonesia using the conceptual framework in (Figure 3). This approach was used to identify factors with direct and indirect effects on the child stunting and wasting. Path models permit identification of both direct effects between indicator and response variables and indirect effects that act through mediating variables. [131] In our model building, we retained independent variables when they had a significant ($\alpha < 0.05$) direct effect on the response variable, while significant indirect effects were also retained in the model if they were mediated through another response variable that itself had a significant direct effect on the response variable. The total pathways are a sum of

direct and indirect pathways. Unstandardized coefficients were presented to examine the significance and direction of each relationship.

Analyses, other than the path analysis were conducted using SAS software (version 9.3; SAS Institute, Cary, NC). A *P*-value <0.05 was declared as statistically significant. The path analysis was performed using maximum likelihood estimation with robust standard errors (MLR) estimator in Mplus software (version 7.4; Muthen and Muthen, 2015), which uses a multivariate logistic regression framework and takes the exponentials of the logistic regression coefficients (odds ratios [OR]). Mplus integrates the statistical concepts captured by latent variables into a general modeling framework that includes structural equation models. [132]

CHAPTER 4 –RESULTS

4.1 Study Population

The study sample included 2,457 mother-child dyads, and represents 60.1% of all children 6-23 months of age in the IDHS survey. Characteristics of households, mothers and children in the study are shown in Tables 1-3.

Table 1. Socio-demographic characteristics of children and mothers in the study (N = 2,457)

Variables	**n (%)**[1]
CHILDREN	
Gender	48.2
Male	51.8
Female	
Age	
6-11 months	31.7
12-27 months	34.8
18-23 months	33.5
MOTHERS	
Education	
< 12 years	68.1
≥ 12 years	31.9
Main occupation	
Unemployed	55.7
Student	0.3
Military/Police force	0.001
Civil servant	5.2
Entrepreneur	11.2
Farmer	13.5
Fisherman	0.1
Factory worker	3.4
Other	10.6

1 Weighted percentage

Table 2. Dietary and nutrition status characteristics of children and mothers in the study (N = 2,457)

Characteristics	Mean	SD	Min	Max
CHILDREN				
- HAZ	-1.2	2.3	-6.0	5.9
- WHZ	-0.7	1.3	-5.5	5.4
- MDD	2.9	1.2	1	7
- Frequency of snack food group intake/day	1.9	0.8	0	8
- Age (months)	14.6	5.1	6	23
- Birth weight (kg)	3.2	0.5	1	5
MOTHERS				
- Age (year)	29.9	6.4	15	53
- BMI	22.9	4.0	14	41.7
- Height (m)	1.5	0.1	1.2	1.8
- MDD	2.7	1.0	1	8

SD = standard deviation
Min = minimum, max = maximum
HAZ = height-for-age z-score
WHZ = weight-for-age z-score
MDD = minimum dietary diversity, for women according to FAO (2014) is based on intake of 10 food groups: 1) all starchy staple foods, 2) beans and peas, 3) nuts and seeds, 4) dairy, 5) flesh foods, 6) eggs, 7) vitamin A-rich dark green leafy vegetables, 8) other vitamin A-rich vegetables and fruits, 9) other vegetables, 10) other fruits. Adequate if $\geq$ 5 groups consumed
MDD for children according to WHO (2014) is based on 7 food groups: 1) grains, roots, and tubers, 2) legumes and nuts, 3) dairy product, 4) flesh foods (meat, fish, poultry and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, 7) other fruits and vegetables. Adequate if $\geq$ 4 groups consumed

As depicted in Table 1, the sample in this study included 2,457 respondents. The majority of mothers were between the age of 20-29 years (44.3%) and 30-39 years (44.9%), with more than two thirds having an education of less than 12 years (68.1%) and more than half, were stay at home mothers (55.7%).

Children were evenly distributed across age groups of 6-11 months (31.78%), 12-17 months (35.23%), and 18-23 months (33.5%). There were slightly more girls (51.8%) compared to boys, but this difference was not significant.

Although data is not shown, regions of residency for the subjects were comparable between urban (49.5%) and rural (50.5%). The majority of households examined in the present study had a total of 4 or less household members (64.5%) with a male household head (97.4%). Mean household monthly expenses was 2.3 million rupiahs with an SD of 2.6 million rupiahs.

Means, standard deviations (SD) and percentages for dietary, nutritional status indicators are shown in Table 2. Means for child HAZ, WHZ, MDD and frequency of snack food group intake per day were -1.2, -0.7, 2.9 and 1.9 respectively.

A small proportion of these children (5.1%) had low birth weight (LBW) defined as birth weight less than 2,500g. Most of the mothers (69.9%) had a normal BMI.

Table 3 depicts the breastfeeding practices. The majority of children were ever breastfed (93.3%) and were breastfed at the time of data collection (81.4%). Interestingly, almost one third of babies were not fed colostrum. Despite this high proportion of breastfeeding, it was not done exclusively as 21.9% were given complementary feeding as early as the first week of life and 65.5% were introduced to complementary feeding before the recommended age of 6 months (Table 4). Complementary food/drink included the following: baby formula (35.4%), baby cereal (24.2%), rice porridge (21.1%), fruit puree/juice (9.5%), regular cow milk (1.8%), water from

boiling rice (1.1%), and other food/drink (6.9%). Table 5 shows that both mothers and their children had low protein intakes, which were 31.6% and 23.7% of the recommended dietary allowance respectively. Most of the children did not have an adequate dietary diversity score (69.3%) as defined by consumption of 4 food groups or more (Table 6). More than half of children had consumed unhealthy snacks (58.7%). Among mothers, 96.1% did not have recommended minimum dietary diversity scores as intake (5 food groups or more). (Mothers' minimum dietary diversity was correlated with mothers' BMI ($p = 0.46$).)

Table 3. Breastfeeding information for children 6-23 months of age in the study (N = 2,457)

Variables	**%**[1]
Ever being breastfed	
Yes	93.3
No	6.7
Currently being breastfed[2]	
Yes	81.4
No	17.1
Missing data	1.5
Mother treatment of colostrum	
Given to baby	70.6
Discarded	29.4

1 Weighted percentages
2 Being breastfed within 24 hours prior to survey

Table 4. Complementary feeding[1] practices for children 6-23 months of age in the study (N = 2,457)

Variables	Percentage[2]
Age when started complementary feeding (days)	
0-7	21.9
8-28	4.8
29-59	4.0
60-89	7.7
90-119	9.6
120-179	17.5
≥ 180	31.6
Don't know	2.9

1 All solid, semi-solid, liquid food and drink in conjunction with breast milk according to WHO (2014)
2 Weighted percentages

Table 5. Protein and energy intake of mothers and children in the study (N = 2,457)

Dietary intake	Mean	SD	% RDA
Child			
Energy, kcal	739.9	572.9	89.6
Protein, g	6.5	4.5	31.6
Mothers			
Energy, kcal	1,395.5	590.3	70.9
Protein, g	11.9	6.4	23.7

SD = standard deviation
RDA = recommended dietary allowance for Indonesian children aged < 2 years of age and women 16-49 years of age

Table 6. Adequacy of minimum dietary diversity of mothers and her children[1] (N = 2,457)

	N	%[2]
Mothers		
Not adequate	2,693	96.1
Adequate	109	3.9
Children		
Not adequate	1,926	69.3
Adequate	855	30.7

1 MDD = minimum dietary diversity, for women according to FAO (2014) is based on intake of 10 food groups: 1) all starchy staple foods, 2) beans and peas, 3) nuts and seeds, 4) dairy, 5) flesh foods, 6) eggs, 7) vitamin A-rich dark green leafy vegetables, 8) other vitamin A-rich vegetables and fruits, 9) other vegetables, 10) other fruits. Adequate if $\geq$ 5 groups consumed
MDD for children according to WHO (2014) is based on 7 food groups: 1) grains, roots, and tubers, 2) legumes and nuts, 3) dairy product, 4) flesh foods (meat, fish, poultry and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, 7) other fruits and vegetables. Adequate if $\geq$ 4 groups consumed
2 Weighted percentages

Younger children were more likely to be breastfed (Table 7). Complementary feeding quality as defined by the adequacy of MDD and consumption of unhealthy snacks was not significantly different across age groups (Table 8 and 9). In this study there was a total of 914 (37.3%) stunted and 359 (14.5%) wasted children (Table 10). Stunting by age groups of 6-11 months, 12-17 months, and 18-23 months was 38.1%, 40.3%, and 41.6% respectively. Wasting for the same age groups was 14.9%, 13.6% and 14.5% respectively.

Table 7. Breastfeeding practices by child age group (N = 2,457)

	Child age categories	%[1]	*p*[2]
Yes	6-11 mo	37.8	<0.001
	12-17 mo	35.9	
	18-23 mo	26.3	
No	6-11 mo	12.8	<0.001
	12-17 mo	27.2	
	18-23 mo	60.0	

1 Weighted percentages
2 Chi-square tests for differences on breastfeeding status by child age categories

Table 8. Adequacy of minimum dietary diversity[1] of children in the study based on age groups (N = 2,457)

	Child age categories	%[2]	*p*[3]
Not adequate	6-11 mo	32.3	0.62
	12-17 mo	34.1	
	18-23 mo	33.6	
Adequate	6-11 mo	30.7	0.62
	12-17 mo	34.4	
	18-23 mo	34.9	

1 MDD = minimum dietary diversity, for children according to WHO (2014) consists of 7 groups: 1) grains, roots, and tubers, 2) legumes and nuts, 3) dairy product, 4) flesh foods (meat, fish, poultry and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, 7) other fruits and vegetables. Adequate if $\geq$ 4 food groups consumed
2 Weighted percentages
3 Chi-square tests for differences on adequacy of MDD by child age categories

Table 9. Unhealthy snack[1] consumption of children in the study based on age groups (N = 2,457)

	Child age categories	%[2]	*p*[3]
Low	6-11 mo	32.9	0.34
	12-17 mo	34.3	
	18-23 mo	32.8	
Medium	6-11 mo	32.5	0.34
	12-17 mo	35.0	
	18-23 mo	32.5	
High	6-11 mo	29.8	0.34
	12-17 mo	33.6	
	18-23 mo	36.6	

1 Unhealthy snacks according to Adair and Popkin [129] and Sekiyama et al [27] which included: a) modern snacks (e.g. stick cheese, cheese balls); b) Traditional snacks (e.g. sweets made from coconuts, flour or rice; and fritters); c) candies and desserts; d) soft drinks (sweetened carbonated beverages and fruit drinks)
2 Weighted percentages
3 Chi-square tests for differences of unhealthy snack consumption by child age categories

Table 10. Percentage of stunting and wasting on children 6-23 months of age in the study based on age groups (N = 2,457)

	Child age categories	Percentage[1]
Stunting[2]	6-11 mo	38.1
(n=914)	12-17 mo	40.3
	18-23 mo	41.6
Wasting[3]	6-11 mo	14.9
(n=359)	12-17mo	13.6
	18-23 mo	14.5

1 Weighted percentages
2 Stunting is HAZ < -2 according to UNICEF
3 Wasting is WHZ <-2 according to UNICEF

4.2 Stunting and Wasting-Socio-demographic Associations

Table 11 shows the characteristics of the study population relative to stunting and wasting status of the children. Location of residence, monthly expenses, number of household members, gender of household head, maternal age, maternal education, maternal occupation, maternal BMI, child age, child gender, and child birth weight were all significantly related to stunting and wasting status ($p<0.0001$).

Children in rural areas were more likely to be stunted than those in urban areas, but there were more wasted children in urban compared to rural areas. In terms of household monthly expenses, there was a significant trend where the higher the monthly expenses, the lower the rate of stunting. This was not true for wasting categories.

With regard to the number of household members, for both stunting and wasting, if there were more than 4 members in the household, rates were lower. Stunted and wasted children were more likely to live in households with a male head. Older women had the lowest number of stunted children. Stay-at-home mothers had more stunted or wasted children compared to working mothers. Mothers who were normal or overweight were more likely to have stunted or wasted children than women who were obese or underweight.

Table 12 depicts the distribution of dietary characteristics by stunting and wasting status. Distribution of maternal and child dietary intake significantly differed by stunting and wasting categories ($p<0.0001$). Mothers with inadequate MDD scores were more likely to have stunted or

wasted children than those with acceptable scores. Children who had never been breastfed were less likely to be stunted or wasted. Children who were not currently breastfed were also less likely to be stunted or wasted. Stunting and wasting was higher among children who were breastfed within one hour after birth as well. Children with adequate dietary diversity were less stunted or wasted. Children who received complementary feeding earlier than the recommended age of 6 months were more likely to be stunted or wasted.

Table 11. Demographic characteristics of households, mothers and children based on stunting and wasting categories (N = 2,457)

	Stunting [a] (n=914;Wt'd%=37.3%)			Wasting[b] (n=359;Wt'd%=14.5%)		
	n	Wt'd %	*p*[c]	n	Wt'd %	*p*[c]
Households (HH)						
Region						
Urban	434	45.9	<0.0001	183	51.0	<0.0001
Rural	549	54.1		176	49.0	
Monthly expenses						
Low						
Medium	353	38.6		106	31.2	
High	315	34.5	<0.0001	139	39.1	<0.0001
	246	26.9		103	29.7	
Number of HH members						
≤ 4						
> 4	637	65.3	<0.0001	229	66.0	<0.0001
	346	34.7		119	34.0	
Gender of HHH						
Male						
Female	959	97.6	<0.0001	333	95.5	<0.0001
	24	2.4		15	4.5	
Mothers						
Age						
< 20	40	4.5	<0.0001	12	3.5	<0.0001
20-29	418	45.7		149	46.6	
30-39	397	43.7		133	41.8	
≥ 40	59	6.4		25	8.1	
Education (y)						
< 6	117	11.7	<0.0001	48	13.9	<0.0001
6-11	562	57.3		185	52.8	
≥ 12Occupation	304	30.9		115	33.3	
Stay at home						
Working						
	543	55.1	<0.0001	202	57.4	<0.0001
BMI	440	44.9		146	42.6	
< 18.5						
18.5-22.9						
23.0-27.4	107	11.8	<0.0001	30	9.2	<0.0001
≥ 27.5	422	46.5		159	49.6	
	275	30.3		88	27.9	
	104	11.5		42	13.3	

a Stunting is HAZ < -2 according to the UNICEF
b Wasting is WHZ < -2 according to the UNICEF
Wt'd: Based on weighted percentage
c Chi-square tests for differences in child stunting and wasting status by household, maternal and child characteristics
Numbers may not sum up to 100.0 due to rounding
HHH= Household head
BMI = body mass index as weight (kg)/height $(m)^2$

Table 11. (cont'd)

	Stunting [a] (n=914;Wt'd%=37.3%)			Wasting[b] (n=359;Wt'd%=14.5%)		
	n	Wt'd %	*p*[c]	n	Wt'd %	*p*[c]
Child						
Age (mo)						
6-11	299	30.3	<0.0001	119	33.1	<0.0001
12-17	345	35.5		120	33.4	
18-23	339	34.2		120	33.4	
Sex						
Male						
Female	473	47.9	<0.0001	160	46.8	<0.0001
	510	52.0		187	53.2	
Birth weight (g)						
< 2,000						
2,000-2,499	5	0.5	<0.0001	5	1.6	<0.0001
2,500-2,999	35	4.4		15	5.1	
3,000-3,499	203	24.3		57	20.2	
≥ 3,500	338	39.6		126	43.2	
	260	31.1		89	29.9	

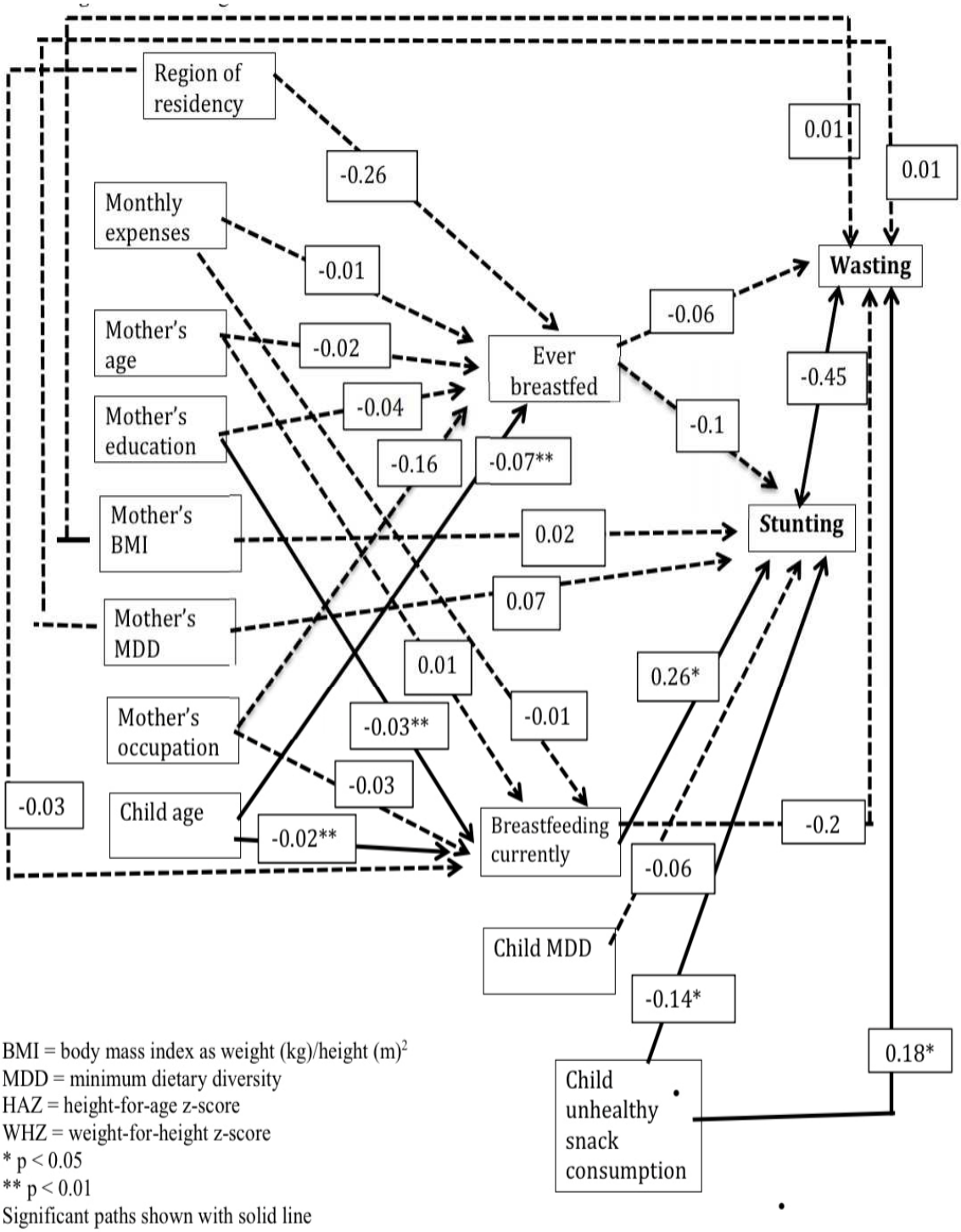
a Stunting is HAZ < -2 according to the UNICEF
b Wasting is WHZ < -2 according to the UNICEF
Wt'd: Based on weighted percentage
c Chi-square tests for differences in child stunting and wasting status by household, maternal and child characteristics
Numbers may not sum up to 100.0 due to rounding
HHH= Household head
BMI = body mass index as weight (kg)/height $(m)^2$

Table 12. Dietary characteristics of mothers and children based on stunting and wasting categories (N = 2,457)

	Stunting [a] (n=914;Wt'd%=37.3%)			Wasting[b] (n=359;Wt'd%=14.5%)		
	n	Wt'd %	*p*[c]	n	Wt'd %	*p*[c]
Mothers						
MDD[d]						
Inadequate	869	95.8	<0.0001	308	97.8	<0.0001
Adequate	40	4.2		8	2.2	
Energy intake[e]						
Low	518	54.9	<0.0001	55	15.9	
Medium	342	32.5		121	33.2	<0.0001
High	123	12.6		172	50.9	
Children						
Breastfeeding						
Ever breastfed	855	93.4	<0.0001	301	94.3	<0.0001
Never breastfed	59	6.6		18	5.8	
Breastfeeding currently	666	79.1	<0.0001	251	83.3	<0.0001
Not breastfeeding currently	189	20.9		50	16.7	
Initial breastfeeding (h)						
≤ 1	435	65.0	<0.0001	158	64.2	<0.0001
> 1	233	35.0		88	35.8	
Complementary feeding[f]						
Inadequate MDD	600	66.9	<0.0001	241	97.8	<0.0001
Adequate MDD	308	33.1		77	2.2	
Introduction of complementary feeding						
< 6 months	649	65.2	<0.0001	236	67.5	<0.0001
≥ 6 months	288	34.8		102	32.5	
Consumption of unhealthy snacks[g]						
Low	385	38.1	<0.0001	159	46.2	<0.0001
Medium	305	31.3		107	30.6	
High	293	30.6		82	23.2	

a = Stunting is HAZ < -2 according to the UNICEF;
b = Wasting is WHZ < -2 according to the UNICEF
Wt'd = Based on weighted percentage
c = Chi-square tests for differences in child stunting and wasting status by mothers and children dietary characteristics
d = MDD = minimum dietary diversity, for women according to FAO (2014) is based on intake of 10 food groups: 1) all starchy staple foods, 2) beans and peas, 3) nuts and seeds, 4) dairy, 5) flesh foods, 6) eggs, 7) vitamin A-rich dark green leafy vegetables, 8) other vitamin A-rich vegetables and fruits, 9) other vegetables, 10) other fruits. Adequate if ≥ 5 groups consumed
e & g = classification based on tertiles
f = MDD for children according to WHO (2014) consists of 7 groups: 1) grains, roots, and tubers, 2) legumes and nuts, 3) dairy product, 4) flesh foods (meat, fish, poultry and liver/organ meats), 5) eggs, 6) vitamin-A rich fruits and vegetables, 7) other fruits and vegetables. Adequate if ≥ 4 food groups consumed

Figure 5. Path diagram of the overall model



4.3 Path Analysis of Factors Associated with Stunting and Wasting

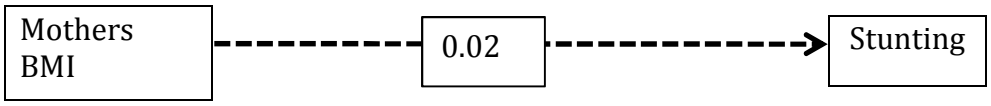
The path analysis summary diagram of the overall model is presented in Figure 5. It shows that child stunting status was significantly influenced by breastfeeding currently and the consumption of unhealthy snacks. For wasting, only mothers' BMI had a significant positive effect.

Specific Aim 1

To examine the relationship between mother's dietary intake and weight status and risk for stunting and wasting in children 6-23 months of age in Indonesia.

It was hypothesized that mothers' BMI would have a direct positive effect on children's stunting or wasting status, meaning that heavier mothers would be less likely to have stunted or wasted children compared to those who had a lower weight status. The direct effect test for the relationship of mothers' BMI to stunting status supported both assumptions (Figure 6. The unstandardized parameter estimate was 0.02, SE = 0.01, p = 0.05) although the significance was borderline.

Figure 6. Direct effect of mothers' BMI relative to children stunting status



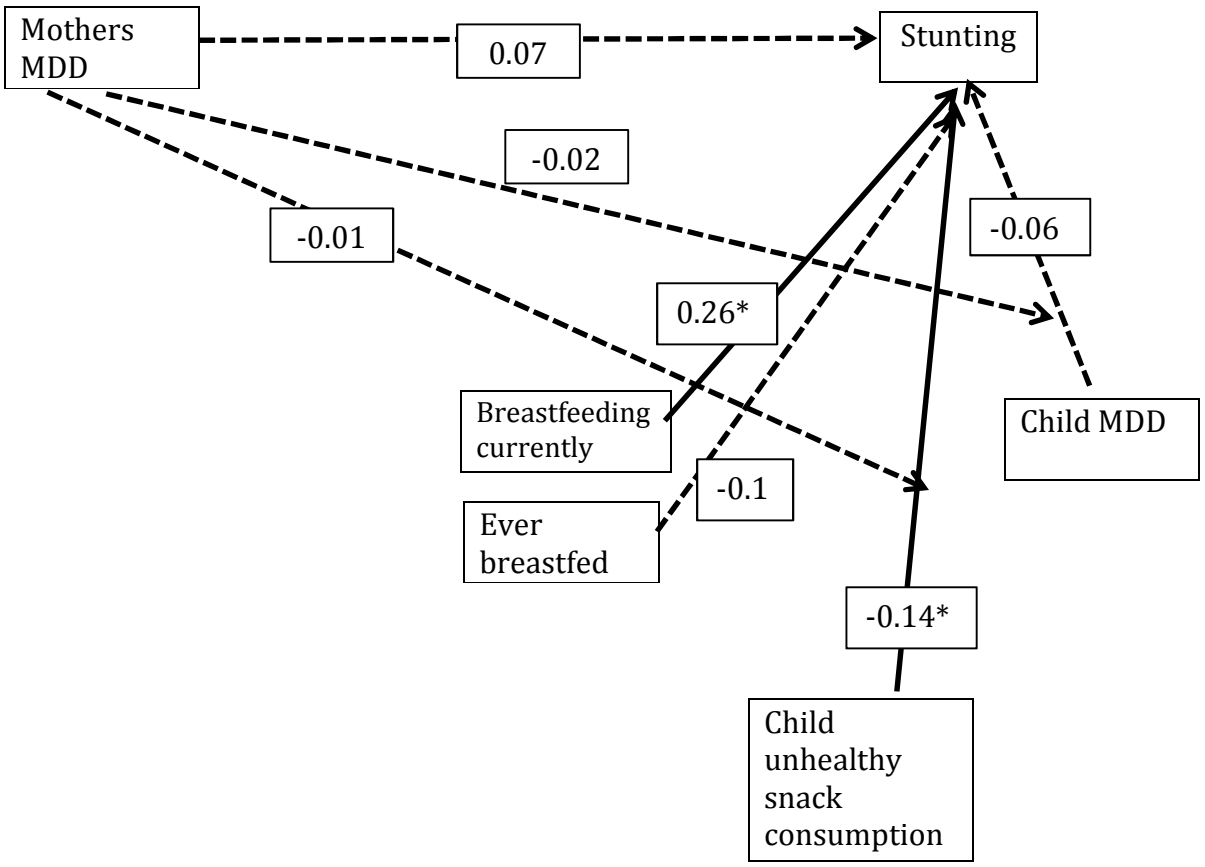
BMI = body mass index as weight (kg)/height $(m)^2$
Stunting is HAZ < -2 according to the UNICEF

For the direct effect of mothers' BMI relative to wasting status in children, the result was not statistically significant (unstandardized parameter estimate = 0.01, SE = 0.02, p = 0.78).

It was also hypothesized that mothers' dietary intake would have an indirect effect on stunting or wasting status in children. First, the mediating effect of mothers' dietary intake was tested and compared with the moderating one. The moderating model had a better fitting model with a log likelihood value closer to zero and a lower Bayesian Information Criterion (BIC) value compared to those for the mediating model. Therefore, the moderating model was used to explain the relationship between mothers' and children's dietary intake and stunting or wasting (Figure 7 and 8).

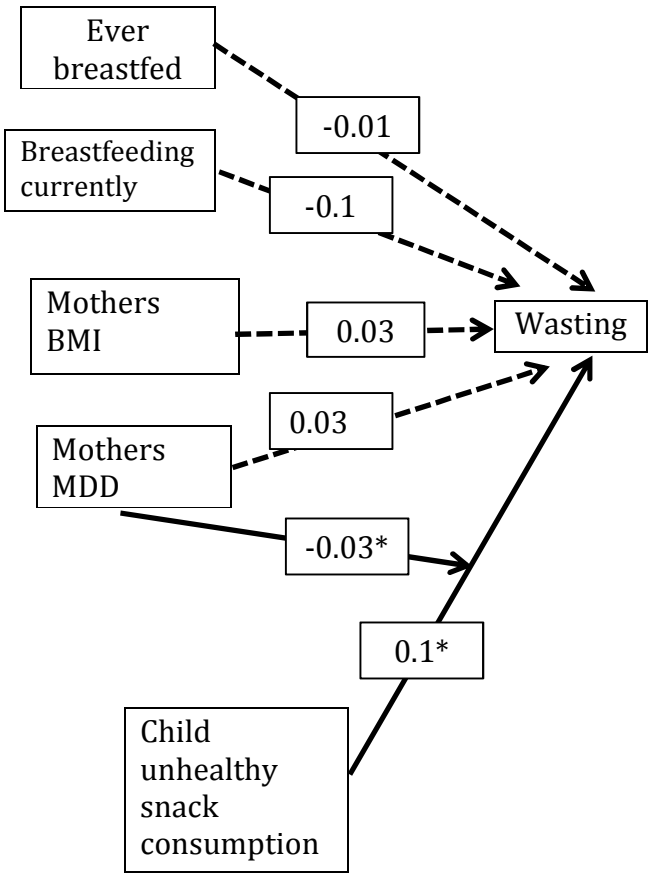
In the model depicting stunting (Figure 7), breastfeeding currently or the consumption of unhealthy snacks significantly affected the child stunting status. The moderating effect of mothers' MDD on child complementary feeding practice (child MDD and unhealthy snack consumption) was not significant. However, the moderating effect of mothers' MDD relative to unhealthy snack consumption was significant for wasting status (Figure 8. Unstandardized parameter estimate = -0.03, SE = 0.01, p = 0.04).

Figure 7. Path analysis relationships of dietary intake of mothers and children with stunting in children



MDD = minimum dietary diversity
Stunting is HAZ < -2 according to UNICEF
* $p < 0.05$
Significant paths shown with solid line

Figure 8. Path analysis relationship of mothers' and children's dietary intake to wasting in children



MDD = minimum dietary diversity
Wasting is WHZ < -2 according to the UNICEF
* $p < 0.05$
Significant paths shown with solid line

Specific aim 2

To examine the relationship between child feeding practices and risk for stunting and wasting in children 6-23 months of age in Indonesia.

Data was analyzed based on breastfeeding and complementary feeding practices. Breastfeeding practices were explained by the child ever being breastfed or if the child was currently being breastfed as per data presented in IDHS

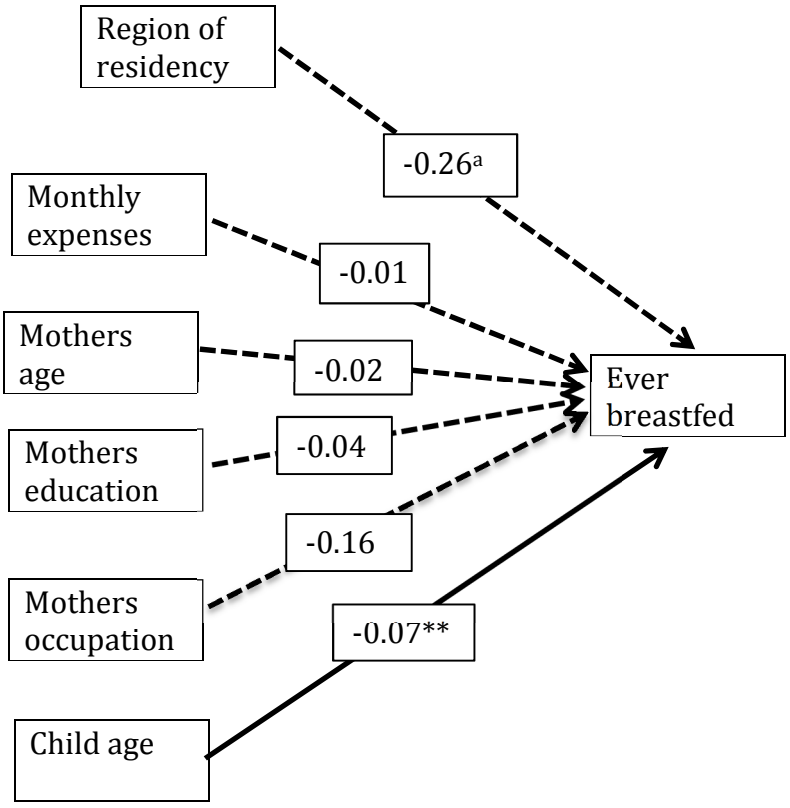
Figure 7 confirmed that breastfeeding was protective against stunting status (unstandardized parameter estimate = 0.26, SE = 0.11, p = 0.02); while ever being breastfed was not significant (unstandardized parameter estimate = 0.03, SE = 0.045, p = 0.5). For wasting status, both child ever being breastfed and currently breastfed were not significantly related.

For stunting status, the lower the unhealthy snack consumption, the lower the stunting risk (unstandardized parameter estimate = -0.14, SE = 0.05, p = 0.008). The child MDD was not significantly related to stunting. For wasting status, the unhealthy snack consumption was once again significant, showing that the more the unhealthy snack consumption the less likelihood of wasting (unstandardized parameter estimate = 0.091, SE = 0.042, p = 0.03).

4.4 Factors Associated with Ever Being Breastfed

Figure 9 shows the determinants for history of ever being breastfed. Only the child's age was significant (unstandardized parameter estimate = -0.07, SE = 0.02, p < 0.001). Mothers' age had borderline significance (unstandardized parameter estimate = -0.02, SE = 0.01, p = 0.06)

Figure 9. Factors associated with children ever being breastfed

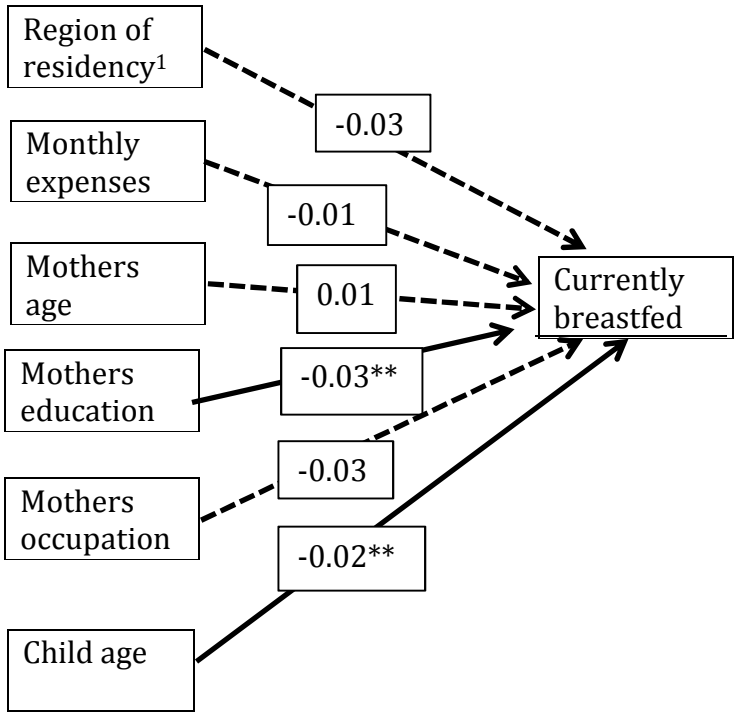


[a] p = 0.06
* p < 0.05
** p < 0.001
Significant paths shown with solid line

4.5 Factors Associated with Current Status of Breastfeeding

Figure 10 shows the determinants for currently being breastfed. Mothers' education was negatively significantly related to the child being breastfed (unstandardized parameter estimate = -0.03, SE = 0.01, $p < 0.001$). Child's age was also negatively related (unstandardized parameter estimate = -0.02, SE = 0.01, $p < 0.001$)

Figure 10. Factors associated with children currently being breastfed



* $p < 0.05$
** $p < 0.001$
Significant paths shown with solid line

Table 13 shows odds ratio for history of ever being breastfed with the younger age group used as the reference. The older age group was less likely to be breastfed.

Table 13. Logistic regression model for age and history of ever being breastfed

Factors	Logistic regression coefficient	Odds ratio	95% Confidence interval Odds ratio	P-value
Age	- 0.4	0.93	0.92-0.96	<0.0001

Table 14 shows the odds ratio for stunting. Children who were not currently being breastfed had a greater risk of 1.29 for stunting while children who were fed unhealthy snack consumption had a 13% higher risk for being stunted (OR= 1.13; 95% CI= 1.12-1.19).

Table 14. Odds ratios from logistic regression model for stunting

	OR (95% CI) for stunting
Currently breastfed	
Yes	1
No	1.29 (1.22-1.29)**
Unhealthy snack consumption	
Low	1
High	1.13 (1.12-1.19)**

** = $p < 0.001$

Table 15 shows the odds ratio for wasting where children who were fed unhealthy snacks were 20% less likely to be wasted.

Table 15. Odds ratios from logistic regression model for wasting

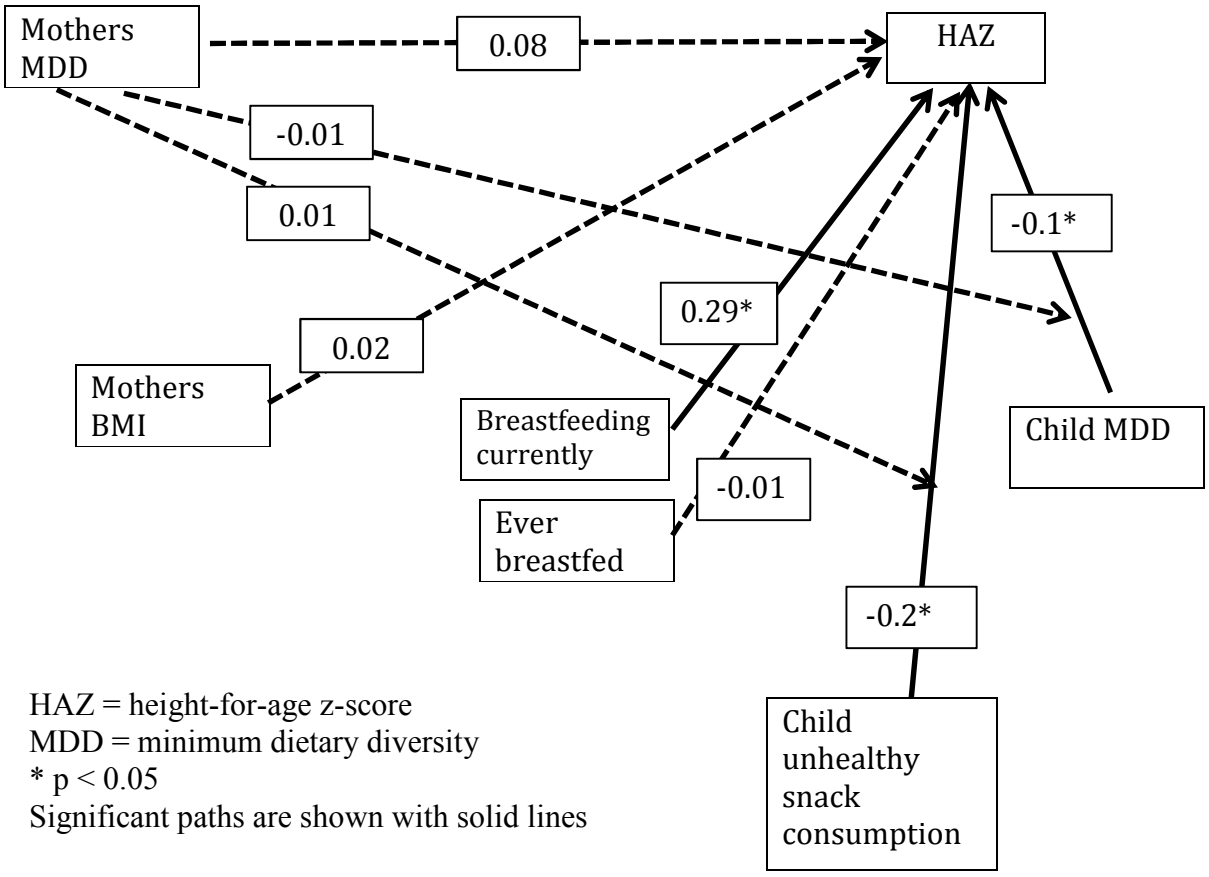
	OR (95% CI) for wasting
Unhealthy snack consumption	
Low	1
High	0.80 (0.78-0.80)**

** = $p < 0.001$

4.6 Path Analysis of Factors Associated with Continuous Stunting and Wasting

Path analysis findings with continuous stunting (HAZ-scores) and wasting (WHZ-scores) outcome variables are depicted in Figures 11 and 12.

Figure 11. Relationship of mothers' and children's dietary intake to child Height for Age Z-scores

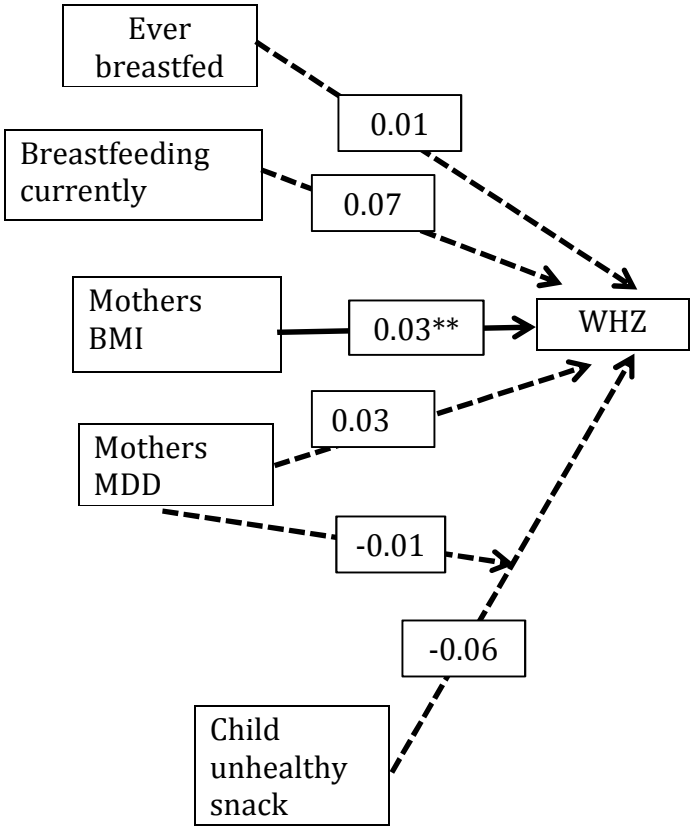


HAZ = height-for-age z-score
MDD = minimum dietary diversity
* $p < 0.05$
Significant paths are shown with solid lines

Figure 11 depicts the relationship of mothers' and children's dietary intakes on child HAZ scores. Currently breastfeeding had a significant positive effect (unstandardized parameter estimate = 0.29, SE = 0.12, $p = 0.02$). Unhealthy snack consumption had a negative significant effect on HAZ-scores (unstandardized parameter estimate = -0.2, SE = 0.06, $p < 0.001$). Child MDD was also negatively significantly related to HAZ-scores (unstandardized parameter estimate = -0.1, SE = 0.04, $p < 0.05$). Mothers' MDD did not have significant moderating effects on child complementary feeding.

With regard to the path analysis for WHZ (Figure 12), only mothers' BMI was significantly positively related (unstandardized parameter estimate = 0.03, SE = 0.01, $p < 0.001$). Heavier mothers had children with higher WHZ scores.

Figure 12. Relationship of mothers' and children's dietary intake to child Weight for Age Z-scores



MDD = minimum dietary diversity
WHZ = weight-for-height z-score
** $p < 0.01$
Significant path shown with a solid line

CHAPTER 5 – DISCUSSION

The MDD for children was 2.9, which is below the WHO's recommendation intake of at least 4 food groups per day. Only a small proportion of children (30.4%) met the MDD recommendation. This seems to be a prominent trend in developing countries. [133–136] Several studies done in children 6-23 months of age showed that the minimum dietary diversity rates were 46% (breastfed children) and 51.4% (non-breastfed children) in Ghana, 16% in Nigeria, 34% in Nepal, and 14% in Ethiopia. [134-137] Similarly, for mothers the MDD was 2.7 compared to the FAO recommendation of at least 5, and even more disturbing was the fact that less than 4% met the recommendation. Dietary diversity scores for women and children have been shown to be good indicators of dietary quality because they are related to micronutrient adequacy of the diet, an important element of dietary quality. [52,137–141] Indonesia has a long term history of micronutrient deficiency, associated with low diversity in the diet. [84] Some key micronutrient deficiencies in Indonesia were iron, iodine, and vitamin A. [121] Dietary diversity is specifically essential for young children who require energy and micronutrients for optimal growth and development [138], and may have been especially low among children in this study because of unequal distribution of food between children and other family members, resulting in insufficient energy intake relative to that recommended. [66]

The mean energy intake of mothers in this study was low, and only fulfilled 71% of RDA with protein consumption less than 25% of RDA. Generally mothers in this study were young, uneducated; unemployed, and of normal weight. A study in Bangladesh among 2,809 women of reproductive age showed that literacy had a significant positive impact on dietary diversity score,

but age did not show a significant effect. [142] Another study among pregnant women in Kenya showed that education and employment status were positively relate to the dietary diversity score. [143] BMI was associated only with the food variety score, the amount of food items consumed in 24 hours, among 210 adult women in Tanzania, but not the dietary diversity score. [144] According to the IDHS 2010 report, 60% of women of reproductive age in Indonesia also had a normal BMI.

Breastfeeding rates were high for both those who reported a history of ever breastfeeding their children and whose children who were currently being breastfed. Despite the high rate of breastfeeding, exclusive breastfeeding,(only breast milk until 6 months of age), was very low. Babies were given food or drink as early as the first week of life including several 'harmful' foods for this young age, such as regular cow's milk and honey. [24] This finding is in accordance with previous studies on complementary feeding in Indonesia. [25,85,145] The main reason for these inappropriate practices is probably mothers' lack of knowledge. In a previous study by Blaney et al, only 35% of mothers were aware of the recommended age for introducing complementary feeding and 60% thought that all kinds of foods were acceptable for complementary feeding. [85]

An interesting Indonesian practice, which was evident in the current study findings, was the restriction of colostrum for the infant. Almost 30% of babies were not fed colostrum. This is a concern because the value of colostrum from a nutrition perspective has been clearly established. [146] However, many Indonesian mothers believe that colostrum is not milk and bad for the newborn. [146] This is also most likely the reason why babies are given complementary feeding as early as the first week of life, since mothers wait for the 'real' milk to be evident before actively

breastfeeding. This is therefore an important misconception, which needs to be addressed by health care professionals working in this vulnerable population.

Consumption of unhealthy snacks was high despite the young age of the children in this study. A study in the rural western part of Indonesia showed that children 0-7 years had a similar consumption of snacks throughout the day. [27] A multi-country study in Asia and Africa found that more than 20% of babies 6-8 months of age consumed sugary snacks with the proportion of children consuming sugary snack foods generally being higher than the proportion who consumed fortified infant cereals, eggs or fruit. [147] Sugary snack food consumption was especially common in Asia: among 6–8-month infants, 10–44% consumed sugary foods, compared to 28–62% among those 9–11-months of age, and 42–75% among those who were 12–23-month of age. [147]

Similar findings were found in a previous study where the typical diet of Indonesians consisted of unbalanced proportions of staple foods, vegetables, fruits and animal-based foods. [84] There were disproportionally large amounts of staple foods, which are low in micronutrients. [84] The protein content in the children's diets was only one third of the RDA. The high consumption of unhealthy snacks may contribute to the low protein content, as unhealthy snacks are typically energy dense, but low in protein and may suppress the child's appetite and decrease diversity in the child's diet. [27] Protein is essential for growth and development. [148] Therefore, it is imperative that efforts to improve the dietary quality in the diets of young children in Indonesia, are enhanced.

The percentages of stunting and wasting in this study was similar to the national average for the same year (2010), which were 37.3% compared to 35.6% and 14.5% compared to 13.3%. These high rates are not surprising given the poor child feeding practices demonstrated in the study. However the reported rate of low birth weight in this study was, almost half of that of national rate in the same year (11.1%). This may be due to fact that in this study LBW information was collected based on mothers' memory. Therefore, it may be under-reported.

Mothers' BMI had a direct positive effect on stunting although the significance was borderline. Previous studies showed that mothers' nutritional status, in particular height and BMI, were related to stunting in their children. [14,40,50,149] Mothers who are undernourished or stunted, may have sub-optimal uterine conditions due to an insufficient nutrient supply for the fetus, which leads to restricted fetal growth and promotes low birth weight and stunting in the babies. [96,150]

Currently being breastfed was protective against stunting. Similar results were found in several studies. [57,102,103,151] The current status of breastfeeding reflects breastfeeding practice beyond the recommendation of exclusive breastfeeding until 6 months of age. This continued breastfeeding protects against infection, particularly relative to the gastrointestinal and respiratory tracts [75,152] and provides important energy and nutrients for child growth. [153]

Factors that significantly determined stunting comprised protective factors (currently breastfed and high child MDD), as well as the negative role of high consumption of unhealthy snacks. Higher child MDD decreased stunting, since MDD is a proxy of a high nutrient content of the diet. [79,154–156]

Child consumption of unhealthy snacks had a significant negative impact on the child height status. This finding was similar to that found in a study of 154 children 1-12 years of age in a rural village of West Java, Indonesia. [27] The study showed that the more snacks were consumed, the lower the HAZ score among these children. [27] On the other hand, unhealthy snack consumption protected against wasting. This may be because unhealthy snacks are energy dense, but this does not mean that the child nutritional status is adequate because of the low nutrient density. [24,27] This was clearly evident in the unacceptable MDD scores for both mothers and children.

A factor that determined history of ever or currently being breastfed was child age. The younger the child the more likely the child was to be breastfed. Another review article in Indonesia also showed that breastfeeding practice declines with increasing age of the child. [145] Interestingly, mothers' education had a significant negative effect on current breastfeeding practices. The more educated the mother, the less they breastfeed their babies. In contrast, a study in a rural area in North Sumatra, Indonesia showed that the majority of mothers (52%) had appropriate knowledge on child feeding practices that included duration and benefits of breastfeeding, regardless of the level of education. [85]

Mothers' BMI had a significant positive effect on child WHZ scores in accordance with several studies [149,157,158]. These studies used a cross-sectional design in Kenya [149] and Ethiopia. [157-158] The data were collected from mothers and their children under 5 years of age. All showed significant positive associations between the mothers' BMI and their children WHZ scores. [149,157,158]

The main finding of this study was that inappropriate child feeding practices were associated with undernutrition among Indonesian children 6-23 months of age, more specifically with stunting and wasting. The national prevalence of stunting and wasting was high, 37.3% and 14.5% respectively, showing that child undernutrition remained a main concern for Indonesia. Factors of feeding practices that determined the child nutritional status included both breastfeeding and complementary feeding. Being breastfed protected the children from stunting, while having calorie-dense intake protected them from wasting.

CHAPTER 6 – SUMMARY AND CONCLUSIONS

6.1 Conclusion

Stunting and wasting prevalence among Indonesian young children was high and dietary intake of these children, i.e. breastfeeding and complementary feeding, was poor. One third of the infants were not given colostrum and introduced to complementary feeding as early as the first week of life. Both mothers and their children had low protein intake and did not meet the requirement for adequate dietary diversity.

Independent factors which contributed significantly to stunting among Indonesian children 6-23 months of age were current status of not breastfeeding and high consumption of unhealthy snacks. The high consumption of unhealthy snacks interestingly had a protective effect on wasting. Mothers' MDD was a moderator variable that decreased the correlation of child high consumption of unhealthy snacks and child wasting status. The logistic regression models for assessing the association between child stunting and wasting categories and mothers MDD-W and weight status controlled for household, maternal and individual characteristics including region of residency, monthly expenses, mothers' age, mothers' education, mothers' BMI, mothers' occupation, and child age.

Mother's BMI had a borderline positive effect on stunting although mother's dietary intake did not have any significant effect on either stunting or wasting. Mother's BMI had a significant direct positive effect on WHZ-score when it was used as a continuous variable. Heavier mothers had children with higher WHZ-scores. Child age was associated with breastfeeding status', the

younger were more likely to be breastfed.. On the other hand, the more educated mothers were less likely to breastfeed their children.

6.2 Implications

In 2013, The Lancet Series on Maternal and Child Nutrition provided evidence that nutrition is important for optimal fetal and child growth and development. [54] Findings from the current study suggest that improving breastfeeding and complementary feeding of young children can enhance their nutritional status and have short-term and long-term positive impacts on stunting and wasting. Furthermore, improvements in nutritional status will result in positive returns since healthier children will likely become healthy and productive adults. Independent factors associated with stunting for Indonesian children 6-23 months included current status of not being breastfeed and a high consumption of unhealthy snacks. High consumption of unhealthy snacks had a protective effect on wasting.

The IDHS 2010 data used in this study did not include information on infectious disease other than malaria and tuberculosis or physical examination/current health status information.

Information on infectious diseases could have provided a clearer picture of immediate causes of child undernutrition. . In addition, cultural barriers and facilitators to the introduction of healthy complementary foods wasn't assessed. This would provide critical information on if and how Indonesian societal and cultural norms need to be considered to enhance social programs that target health, and maintain well-being in the disadvantaged, especially young children in Indonesia.

The policy implications for the Indonesian government are: 1) to determine how to implement The Indonesian Minister of Health decree on exclusive breastfeeding more effectively, 2) to support breastfeeding mothers who are working with regulations for adequate maternity leave, and breastfeeding-friendly workplaces, and 3) to regulate the marketing efforts by infant formula companies such as prohibition to advertise at health centers, in addition, donation of formula should be allowed only during emergency situations. Implications for healthcare professionals are to develop and implement: 1) programs to improve mothers' knowledge and breastfeeding practices, both for exclusive breastfeeding and continued breastfeeding from birth to2 years of age, 2) programs to improve mothers and young children's dietary quality, in particular mothers' and children's dietary diversity and reduce children's consumption of unhealthy snacks.

6.3 Strengths and Limitations

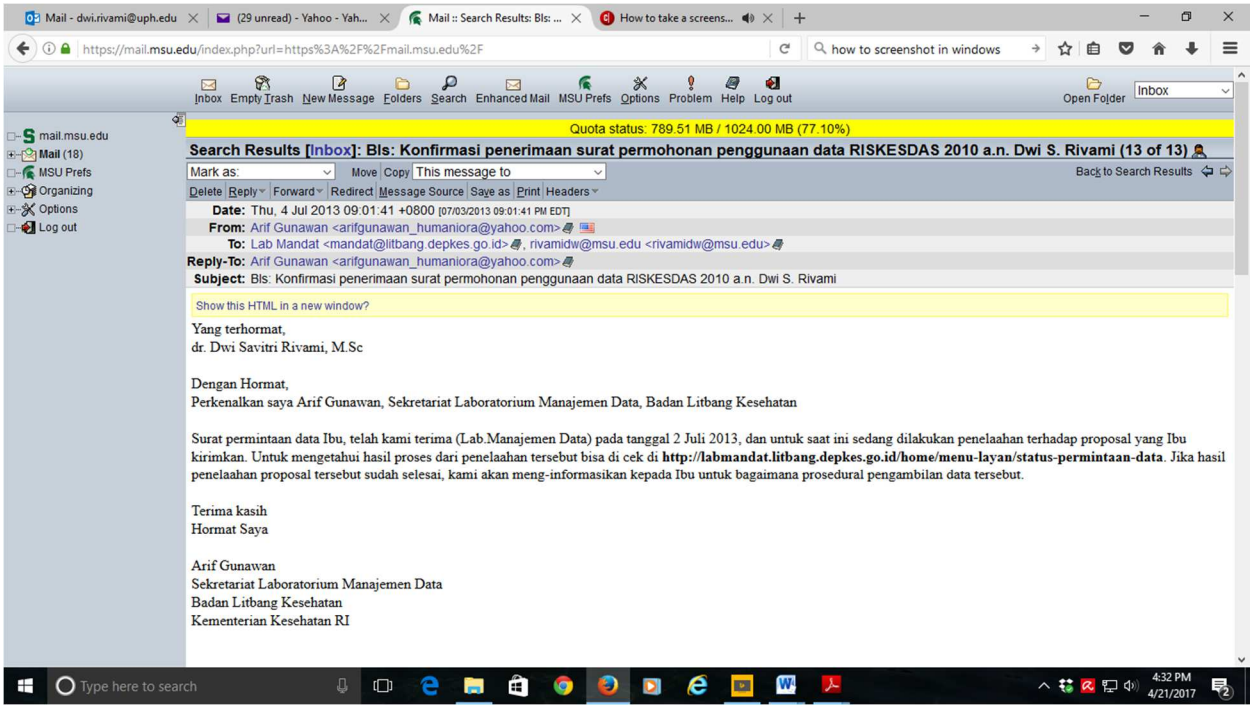
This current study uses national data, includes mother-child dyads and combines dietary information with household, mother, and child information. To our knowledge this is the first that examines the relationships between unhealthy snack food consumption with stunting and wasting in Indonesia and beyond. The large sample size in this study increases both reliability and generalizability to other mother-young child dyads in Indonesia. Factors that may have limited the results was that dietary intake information was derived from one 24-hour dietary recall that may not be adequate to represent usual dietary intake of mothers and their children, and may also contain recall bias. With regard to capturing dietary pattern information, a) food frequency would have been better compared to 24-hour dietary recall. We also did not include data from the fathers who potentially had some influence on the nutritional status of their

children. Due to the cross-sectional nature of the study design used, evidence of a causal relationship between child feeding practices and risk for stunting and wasting cannot be established. We tried to include all possible confounding factors in the current study, but some unidentified and unknown confounders may have been missed. For example in the dataset, some important information was not collected such as: actual initiation of complementary feeding per se was not measured well, history of diseases such as congenital diseases and hospitalization prior to data collection were not included. Other determinants of breastfeeding and complementary feeding (e.g. the lack value for colostrum), such as: beliefs, attitudes, knowledge, self-efficacy, misconceptions, maternal care and practices, family or social support (e.g. poor support could result in early breastfeeding cessation), type of employment, and child care support, were not assessed. Cultural differences and/or preferences were also not measured. Longitudinal studies are needed to establish causal-effect relationships between dietary intake of children and mothers and diseases over time. Future research studies should also include in-depth qualitative methods to better understand why breastfeeding continuation after 6 months of age was low, even though it was initiated earlier.

APPENDICES

Appendix 1 – Electronic approval

Appendix 1A - Indonesian email with approval to use the IDHS data



Mail - dwi.rivami@uph.edu | (29 unread) - Yahoo - Yah... | Mail :: Search Results: Bls: ... | How to take a screens...

https://mail.msu.edu/index.php?url=https%3A%2F%2Fmail.msu.edu%2F

how to screenshot in windows

Inbox | Empty Trash | New Message | Folders | Search | Enhanced Mail | MSU Prefs | Options | Problem | Help | Log out | Open Folder | Inbox

mail.msu.edu
Mail (18)
MSU Prefs
Organizing
Options
Log out

Quota status: 789.51 MB / 1024.00 MB (77.10%)

Search Results [Inbox]: Bls: Konfirmasi penerimaan surat permohonan penggunaan data RISKESDAS 2010 a.n. Dwi S. Rivami (13 of 13)

Mark as: | Move | Copy | This message to | Back to Search Results

Delete | Reply | Forward | Redirect | Message Source | Save as | Print | Headers

Date: Thu, 4 Jul 2013 09:01:41 +0800 [07/03/2013 09:01:41 PM EDT]
From: Arif Gunawan <arifgunawan_humaniora@yahoo.com>
To: Lab Mandat <mandat@litbang.depkes.go.id>, rivamidw@msu.edu <rivamidw@msu.edu>
Reply-To: Arif Gunawan <arifgunawan_humaniora@yahoo.com>
Subject: Bls: Konfirmasi penerimaan surat permohonan penggunaan data RISKESDAS 2010 a.n. Dwi S. Rivami

Show this HTML in a new window?

Yang terhormat,
dr. Dwi Savitri Rivami, M.Sc

Dengan Hormat,
Perkenalkan saya Arif Gunawan, Sekretariat Laboratorium Manajemen Data, Badan Litbang Kesehatan

Surat permintaan data Ibu, telah kami terima (Lab.Manajemen Data) pada tanggal 2 Juli 2013, dan untuk saat ini sedang dilakukan penelaahan terhadap proposal yang Ibu kirimkan. Untuk mengetahui hasil proses dari penelaahan tersebut bisa di cek di **http://labmandat.litbang.depkes.go.id/home/menu-layan/status-permintaan-data**. Jika hasil penelaahan proposal tersebut sudah selesai, kami akan meng-informasikan kepada Ibu untuk bagaimana prosedural pengambilan data tersebut.

Terima kasih
Hormat Saya

Arif Gunawan
Sekretariat Laboratorium Manajemen Data
Badan Litbang Kesehatan
Kementerian Kesehatan RI

Type here to search | 4:32 PM 4/21/2017

Appendix 1B – English Translation

Dear,
Dr. Dwi Savitri Rivami, M.Sc

With respect,
I am Arif Gunawan, from the Secretariat of Data Management Lab, R & D Agency, Ministry of Health.

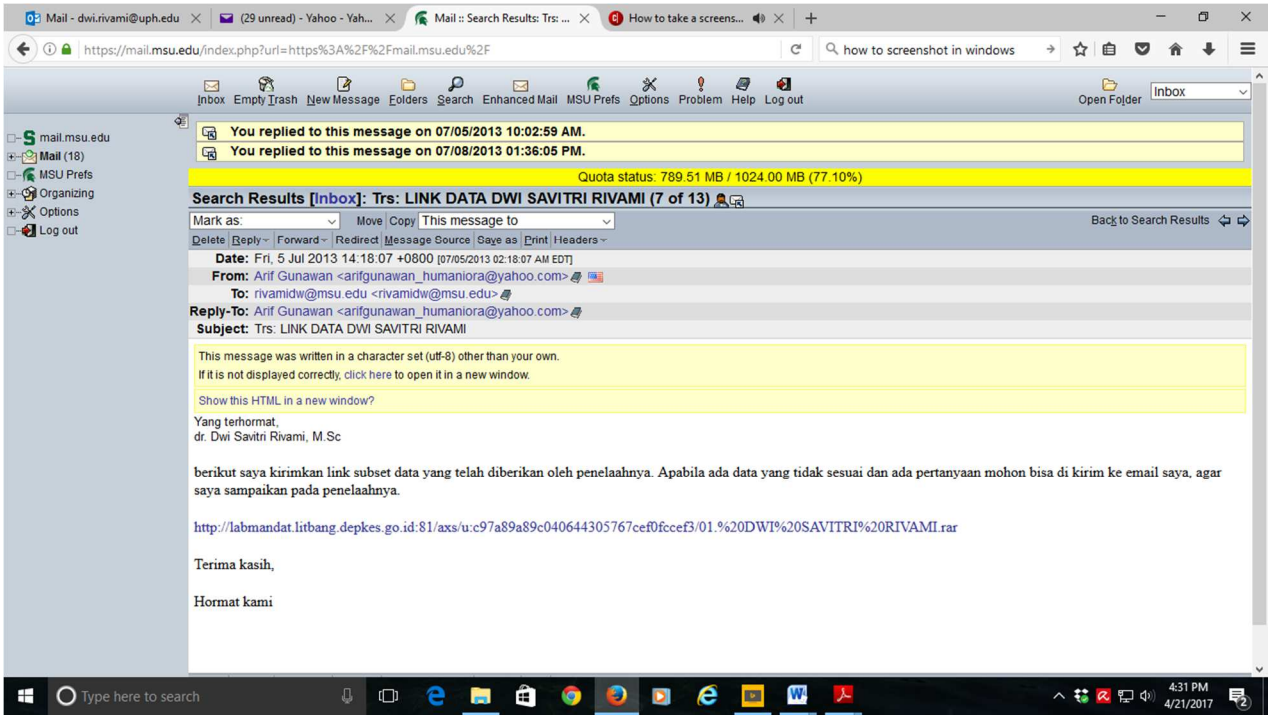
We have received your data request letter (Data Management Lab) on July 2, 2013, and now the proposal is in a review process. To find out the results of the review process please check at http://labmandat.litbang.depkes.go.id/home/menu-layan/status-permata-data. When the proposal review is completed, we will inform you on how the data can be accessed.

Thank you
Best regards

Arif Gunawan
Secretariat of Data Management Laboratory
R & D Agency
Ministry of Health Republic of Indonesia

Appendix 2 – Link to access the IDHS data

Appendix 2A Indonesian email with link to access the IDHS data



Appendix 2B English translation

Dear,
Dr. Dwi Savitri Rivami, M.Sc

Here I submit a subset of data links that have been given by the reviewers. If any data is not appropriate and there is a question please contact me by email, so I can refer to the reviewers.

http://labmandat.litbang.depkes.go.id:81/axs/u:c97a89a89c040644305767cef0fccef3/01.%20DWI%20SAVITRI%20RIVAMI.rar

Thank you,

Best regards

Appendix 3 – Indonesian Demographic and Health Survey Questionnaire (Indonesian)

RAHASIA

RISET KESEHATAN DASAR (RISKESDAS 2010)

RKD10.IND

PENGENALAN TEMPAT (Kutip dari Blok I. PENGENALAN TEMPAT RKD10.RT)								
Prov	Kab/ Kota	Kec	Desa/Kel	K/D	No Kode Sampel	No. urut sampel RT	No urut RT SP 2010	SAMPEL BS LABORATORIUM
								1.Ya 2.Tidak ☐

VIII. KETERANGAN INDIVIDU

A. IDENTIFIKASI RESPONDEN

A01	Tuliskan nama dan nomor urut Anggota Rumah Tangga (ART)	Nama ART	Nomor urut ART: ☐☐
A02	Untuk ART pada A01 < 15 tahun/ kondisi sakit/ orang tua yang perlu didampingi/diwakili, tuliskan nama dan nomor urut ART yang mendampingi/mewakili	Nama ART	Nomor urut ART: ☐☐
A03	Tanggal pengumpulan data	☐☐-☐☐-☐☐☐☐	

B. PENYAKIT MENULAR

[NAMA] pada pertanyaan di bawah ini merujuk pada NAMA yang tercatat pada pertanyaan A01
PERTANYAAN B01-B10 DITANYAKAN PADA ART SEMUA UMUR

MALARIA

B01	Dalam **1 tahun** terakhir, apakah **[NAMA]** pernah didiagnosis menderita Malaria **yang sudah dipastikan dengan pemeriksaan darah** oleh tenaga kesehatan (dokter/ perawat/ bidan)?	1.Satu (1) kali 2. Dua (2) kali 3. ≥Tiga (3) kali 4. Tidak → **B07**	☐
B02	Apakah juga dalam **1 bulan** terakhir, **[NAMA]** pernah didiagnosis menderita Malaria **yang sudah dipastikan dengan pemeriksaan darah** oleh tenaga kesehatan (dokter/ perawat/ bidan)?	1. Ya 2. Tidak → **B07**	☐
B03	Bila Ya, Dimana pemeriksaan terakhir dilakukan: 1. RS Pemerintah 4. Balai Pengobatan/ Klinik 7. Pustu 2. RS Swasta 5. Praktek dokter 8. Polindes. 3. Puskesmas 6. Praktek perawat/bidan 9. Poskesdes		☐
B04	Apakah **[NAMA]** mendapat pengobatan **obat program kombinasi artemisinin** (ACT, lihat alat peraga)?	1. Ya 2. Tidak → **B09**	☐
B05	Jika Ya, apakah **[NAMA]** mendapat pengobatan dalam 24 jam pertama menderita panas?	1. Ya 2. Tidak	☐
B06	Apakah **[NAMA]** diberi pengobatan kombinasi artemisinin (ACT) selama **3 hari**? 1. Ya, diminum habis. 2. Ya, diminum tidak habis, jelaskan alasannya		☐
	LANJUTKAN KE B09		
B07	Dalam 1 bulan terakhir, apakah **[NAMA]** pernah menderita panas disertai menggigil atau panas naik turun secara berkala, dapat disertai sakit kepala, berkeringat, mual, muntah?	1. Ya → **B09** 2. Tidak	☐
B08	Dalam 1 bulan terakhir, apakah **[NAMA]** pernah minum obat anti malaria meskipun **tanpa** gejala (panas)?	1. Ya 2. Tidak → **B11A**	☐
B09	Apakah menggunakan **obat-obat tradisional/tanaman obat** untuk penyakit/keluhan tersebut di atas?	1. Ya 2. Tidak → **B11A**	☐
B10	Bila Ya, Apa nama obat tradisional/tanaman obat yang **paling sering** digunakan:	....	

1

B11A	JIKA ART BERUMUR ≥ 15 TAHUN → P.B11 JIKA ART BERUMUR 10 TAHUN → P.C23 JIKA ART BERUMUR 5 - 9 TAHUN → BLOK IX. KONSUMSI INDIVIDU JIKA ART BERUMUR < 5 TAHUN → E. KESEHATAN BALITA

TUBERKULOSIS PARU (TB PARU) , SEMUA ART UMUR ≥ 15 TAHUN

B11	Apakah **[NAMA]** pernah didiagnosis menderita TB Paru melalui pemeriksaan dahak dan/atau foto paru, oleh tenaga kesehatan (dokter/ perawat/ bidan)?	1. Ya 2. Tidak→**B17**	☐
B12	**Dalam 12 bulan terakhir**, apakah **[NAMA]** pernah didiagnosis menderita TB Paru melalui pemeriksaan dahak dan/atau foto paru, oleh tenaga kesehatan (dokter/ perawat/ bidan)?	1. Ya 2. Tidak→**B17**	☐
B13	Dimana **[NAMA]** didiagnosis? 1. RS Pemerintah 2. RS Swasta 3. Puskesmas 4. Balai Pengobatan/ Klinik/ Praktek Dokter		☐
B14	Setelah didiagnosa, dimana **[NAMA]** mendapatkan pengobatan? 1. RS Pemerintah 4. Praktek Dokter 2. RS Swasta 5. Balai Pengobatan/ Klinik 3. Puskesmas 6. Tidak Berobat →**B17**		☐
B15	Jenis obat apa yang **[NAMA]** minum saat ini (contoh obat ditunjukkan kepada responden): 1. Kombipak/FDC (*Fixed Dose Combination*) 2. Bukan kombipak/FDC, sebutkan bila ada		☐
B16	Berapa lama **[NAMA]** diberi pengobatan? 1 Mendapat pengobatan sampai selesai, selama 6 bulan atau lebih →**C01** 2. Sedang dalam proses pengobatan < 6 bulan 4. Berhenti berobat setelah 2-5 bulan 3. Berhenti berobat < 2 bulan 5. Tidak minum obat		☐
B17	Dalam 12 bulan terakhir, apakah **[NAMA]** pernah menderita batuk berdahak ≥ 2 minggu disertai satu atau lebih gejala: dahak bercampur darah/ batuk berdarah, berat badan menurun, berkeringat malam hari tanpa kegiatan fisik, dan demam > 1 bulan?	1. Ya 2. Tidak → **C01**	☐
B18	Apa yang dilakukan oleh **[NAMA]** untuk mengatasi gejala di atas: 1. Masih meneruskan pengobatan program TB Paru → **C01** 3. Beli obat di apotek/ Toko obat 2. Kembali ke tenaga kesehatan → **C01** 4. Minum obat herbal/ tradisional 5. Tidak diobati		☐
B19	Apa alasan utama yang menyebabkan [NAMA] dengan gejala TB tidak pergi berobat ke tenaga kesehatan: 1.Penyakit tidak berat 3.Tidak ada waktu 5. Dapat diobati sendiri/ sembuh sendiri 2.Akses ke fasilitas kesehatan sulit 4.Tidak ada biaya 6. Lainnya, sebutkan		☐

C. PENGETAHUAN DAN PERILAKU (SEMUA ART UMUR ≥ 15 TAHUN)

HIV/AIDS

C01	Apakah **[NAMA]** pernah mendengar tentang HIV/AIDS	1. Ya 2. Tidak → **C07**	☐

C02 Apakah HIV/AIDS dapat ditularkan melalui:
DIBACAKAN DAN ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK , ATAU 8=TIDAK TAHU

a. Hubungan seksual yang tidak aman	☐	f. Penularan dari ibu ke bayi selama hamil	☐
b. Penggunaan jarum suntik bersama	☐	g. Membeli sayuran segar dari petani/penjual yang terinfeksi HIV/AIDS	☐
c. Transfusi darah	☐	h. Makan sepiring dengan orang yang terkena virus HIV/AIDS	☐
d. Penularan dari ibu ke bayi saat persalinan	☐	i. Melalui makanan yang disiapkan oleh ODHA (Penderita HIV/AIDS)	☐
e. Penularan dari ibu ke bayi saat menyusui	☐	j. Melalui gigitan nyamuk	☐

C03	Apakah HIV/AIDS dapat dicegah dengan : **DIBACAKAN DAN ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK , ATAU 8=TIDAK TAHU**					
	a. Berhubungan seksual hanya dengan satu pasangan tetap yang tidak berisiko	☐	c.Tidak melakukan hubungan seksual sama sekali	☐	e. Tidak menggunakan jarum suntik bersama	☐
	b. Berhubungan seksual dengan suami/istri saja	☐	d. Menggunakan kondom saat berhubungan seksual dengan pasangan berisiko	☐	f. Melakukan sunat/sirkumsisi	☐
C04	Andaikan ada anggota keluarga [**NAMA**] menderita HIV/AIDS, apa yang akan dilakukan? **BACAKAN DAN ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK ATAU 8=TIDAK TAHU**					
	a. Merahasiakan	☐	c. Konseling dan pengobatan	☐	e. Mengucilkan	☐
	b. Membicarakan dengan anggota keluarga lain	☐	d. Mencari pengobatan alternatif	☐	f. Bersedia merawat di rumah	☐
C05	Apakah [**NAMA**] mengetahui tentang adanya tes HIV/AIDS secara sukarela yang didahului dengan konseling?		1. Ya 2. Tidak → **C07**			☐
C06	Dimana memperoleh pelayanan tes HIV/AIDS secara sukarela tersebut? **[JAWABAN TIDAK DIBACAKAN], ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK**					
	1. Rumah Sakit Pemerintah	☐	4. Klinik Swasta	☐	7. Bidan/ Perawat	☐
	2. Rumah Sakit Swasta	☐	5. Klinik VCT	☐	8. Lainnya, sebutkan	☐
	3. Puskesmas/ Pustu	☐	6. Dokter praktek	☐		
PENCEGAHAN TUBERKULOSIS PARU (TB PARU)						
C07	Di mana [**NAMA**] biasanya meludah **[JAWABAN TIDAK DIBACAKAN]** 1. Tidak biasa meludah 2. Meludah di kamar mandi		3. Meludah di tempat ludah/kaleng 4. Meludah di sembarang tempat			☐
C08	Apakah [**NAMA**] biasanya membuka jendela kamar tidur setiap hari		1. Ya 2. Tidak 3. Tidak Punya			☐
C09	Apakah [**NAMA**] menjemur kasur dan atau bantal dan atau guling kapuk secara teratur satu kali seminggu?		1. Ya 2. Tidak 3. Tidak Punya			☐
C10	Apakah [**NAMA**] mempunyai kebiasaan makan dan/atau minum sepiring/ segelas dengan orang lain?		1.Ya 2. Tidak			☐
PENCEGAHAN MALARIA						
C11	Apa yang [**NAMA**] biasa lakukan selama ini untuk mencegah malaria? **JAWABAN TIDAK DIBACAKAN, Lakukan probing. ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK**					
	a. Tidur menggunakan kelambu	☐	e.Rumah disemprot obat nyamuk/insektisida	☐		
	b. Memakai obat nyamuk bakar/elektrik	☐	f. Minum obat pencegahan bila bermalam di daerah endemis malaria	☐		
	c. Jendela/ ventilasi menggunakan kasa nyamuk	☐	g. Lainnya, ...	☐		
	d. Menggunakan repelen/ bahan-bahan pencegah gigitan nyamuk	☐				
PENGGUNAAN TEMBAKAU						
C12	Apakah [**NAMA**] merokok/ mengunyah tembakau selama **1 bulan terakhir**? 1. Ya, setiap hari 2. Ya, kadang-kadang → **C14** 3. Tidak, tetapi sebelumnya pernah → **C16** 4. Tidak pernah sama sekali → **C18**					☐
C13	Berapa umur [**NAMA**] mulai merokok/ mengunyah tembakau "**setiap hari**" ? **ISIKAN DENGAN "88" JIKA RESPONDEN MENJAWAB TIDAK INGAT**		..... tahun			☐☐
C14	Rata-rata berapa batang rokok/ cerutu/ cangklong (buah)/ tembakau (susur) yang [**NAMA**] hisap per hari?		.....batang			☐☐

C15	Apakah **[NAMA]** biasa merokok di dalam rumah ketika bersama ART lain?	1. Ya →**C17** 2.Tidak→**C17**	☐
C16	Berapa umur **[NAMA]** ketika berhenti/tidak merokok/ mengunyah tembakau sama sekali? **ISIKAN DENGAN "88" JIKA RESPONDEN MENJAWAB TIDAK INGAT**	..... tahun	☐☐
C17	Berapa umur **[NAMA]** ketika "**pertama kali**" merokok/ mengunyah tembakau? **ISIKAN DENGAN "88" JIKA RESPONDEN MENJAWAB TIDAK INGAT**	..... tahun	☐☐

KONSUMSI JAMU / OBAT TRADISIONAL

C18	Apakah **[NAMA]** biasa mengonsumsi jamu/ obat tradisional? 1. Ya, setiap hari 2. Ya, kadang-kadang 3. Tidak, tetapi sebelumnya pernah 4. Tidak pernah sama sekali → **C23**	☐
C19	Apakah **[NAMA]** minum jamu buatan sendiri 1. Ya 2. Tidak → **C21**	☐
C20	Jika Ya, Apakah jamu buatan sendiri **[NAMA]** menggunakan bahan: **1=YA, 2=TIDAK**	
	a. Temulawak ☐	d. Meniran ☐
	b. Jahe ☐	e. Pace ☐
	c. Kencur ☐	f. Lainnya , sebutkan..... ☐
C21	Bentuk sediaan jamu yang **[NAMA]** biasa dikonsumsi **1=YA, 2=TIDAK**	
	a. Kapsul/pil/tablet ☐	c. Rebusan (rajangan) ☐
	b. Seduhan(serbuk) ☐	d. Cairan ☐
C22	Apakah dengan mengkonsumsi jamu/obat tradisional bermanfaat bagi **[NAMA]**	1. Ya 2. Tidak ☐

C23	**JIKA ART WANITA BERUMUR 10 - 59 TAHUN → Da. KESEHATAN REPRODUKSI** **JIKA ART WANITA BERUMUR >= 60 tahun → BLOK IX. KONSUMSI INDIVIDU** **JIKA ART LAKI-LAKI 10 – 24 Tahun → Df01** **JIKA ART LAKI-LAKI ≥ 25 Tahun → BLOK IX. KONSUMSI INDIVIDU**

D. KESEHATAN REPRODUKSI

Da. MASA REPRODUKSI PEREMPUAN (KHUSUS ART PEREMPUAN 10-59 TAHUN)

Da01	Berapa umur **[NAMA]** ketika pertama kali haid (menstruasi)	Umur:.....(tahun) Belum haid 77→ **Df01** **Tidak tahu/ Lupa 88**	☐☐
Da02	Apakah dalam 12 bulan terakhir **[NAMA]** pernah mengalami menstruasi tidak teratur?	1. Ya 2. Tidak → **Db01a**	☐
Da03	Apakah dalam 12 bulan terakhir **[NAMA]** pernah mengalami terlambat haid	1. Ya 2. Tidak → **Db01a**	☐
Da 04	Apakah **[NAMA]** saat ini sedang hamil atau baru melahirkan?	1. Ya → **Db01a** 2.Tidak	☐
Da05	Menurut **[NAMA]**, mengapa mengalami menstruasi tidak teratur? **(JANGAN MEMBACAKAN ALTERNATIF JAWABAN)**	1. Menjelang Menopause 2. Sakit menahun 3. Keturunan 4.Lainnya,tuliskan..... 8.Tidak tahu	☐

Da06	Apa yang [**NAMA**] lakukan untuk mengatasi menstruasi yang tidak teratur tersebut? **(JANGAN MEMBACAKAN ALTERNATIF JAWABAN)** **1=YA ATAU 2=TIDAK**			
	a. Minum pelancar haid	☐	d. Suntikan hormon	☐
	b. Minum Jamu	☐	e. Lainnya, tuliskan.....	☐
	c. Obat-obatan dokter	☐		

Db01a	**PERTANYAAN BERIKUT KHUSUS RESPONDEN PERNAH KAWIN. CEK BLOK IV KETERANGAN ART KOLOM STATUS KAWIN.** **JIKA STATUS KAWIN = 1 (BELUM KAWIN)→ Df01.** **JIKA STATUS KAWIN= 2 (KAWIN), 3 (CERAI HIDUP) ATAU 4 (CERAI MATI) → LANJUTKAN PERTANYAAN Db01**

Db. FERTILITAS (KHUSUS PEREMPUAN PERNAH KAWIN USIA 10-59 TAHUN)

Db01	Berapa umur [**NAMA**] ketika menikah pertama kali?	Umur ..... tahun Tidak Tahu 88	☐☐
Db02	Apakah [**NAMA**] pernah mendapat imunisasi TT?	1. Ya 2. Tidak → **Db04** 8. Tidak Tahu → **Db04**	☐
Db03	a. Berapa kali [**NAMA**] diberi imunisasi TT sebelum menikah?	Jumlah suntikan..... .....kali	☐
	b. Berapa kali [**NAMA**] diberi imunisasi TT setelah menikah?	Jumlah suntikan..... ...kali	☐
	JIKA TIDAK PERNAH TULISKAN "0", JIKA 7 KALI IMUNISASI ATAU LEBIH TULISKAN "7", JIKA TIDAK TAHU TULISKAN "8"		
Db04	Selama umur ibu, a. Apakah [**NAMA**] pernah mengalami kehamilan?	1. Ya 2. Tidak →**Dc01**	☐
	b. Apakah [**NAMA**] pernah hamil yang berakhir pada usia kehamilan <22 mg atau < 5 bulan?	1. Ya 2. Tidak 8. Tidak Tahu	☐
	c. Apakah [**NAMA**] pernah hamil tetapi berakhir ≥22 minggu atau ≥5 bulan dan bayi tidak menunjukkan tanda-tanda kehidupan?	1. Ya 2. Tidak 8. Tidak Tahu	☐
	d. Apakah [**NAMA**] pernah melahirkan bayi hidup (termasuk yang hidup hanya sesaat)?	1. Ya 2. Tidak	☐
Db05	Apakah [**NAMA**] mempunyai anak laki-laki atau anak perempuan yang dilahirkan dan sekarang tinggal bersama [**NAMA**]?	1. Ya 2. Tidak → **Db07**	☐
Db06	Jumlah anak yang tinggal bersama [**NAMA**]? a. Jumlah anak laki-laki b. Jumlah anak perempuan **Jika tidak ada tuliskan "00"**	a. Anak laki-laki di rumah	☐☐
		b. Anak perempuan di rumah	☐☐
Db07	Apakah [**NAMA**] mempunyai anak yang [**NAMA**] lahirkan yang sekarang masih hidup tapi tidak tinggal bersama [**NAMA**]?	1. Ya 2. Tidak → **Db09**	☐
Db08	Jumlah anak yang masih hidup tetapi tidak tinggal bersama [**NAMA**]? a. Jumlah anak laki-laki	a. Anak laki-laki di tempat lain	☐☐
	b. Jumlah anak perempuan **Jika tidak ada tuliskan "00"**	b. Anak perempuan di tempat lain	☐☐
Db09	Apakah [**NAMA**] pernah melahirkan anak laki-laki atau perempuan yang lahir hidup tetapi sekarang sudah meninggal (termasuk yang hidup hanya sesaat)?	1. Ya 2. Tidak → **Db11**	☐
Db10	a. Berapa jumlah anak laki-laki yang sudah meninggal	a. Anak laki-laki yang sudah meninggal	☐☐
	b. Berapa Jumlah anak perempuan yang sudah meninggal **Jika tidak ada tuliskan "00"**	b. Anak perempuan yang sudah meninggal	☐☐
Db11	JUMLAHKAN ISIAN Db06a, Db06b, Db08a, Db08b, Db10a, Db10b DAN TULISKAN JUMLAH TOTALNYA	**JUMLAH ANAK: .....**	☐☐

Dc. ALAT/CARA KB (KHUSUS PEREMPUAN PERNAH KAWIN USIA 10-59 TAHUN)

Dc01	Apakah **[NAMA] dan pasangan**, memakai alat kontrasepsi/alat/cara KB untuk mencegah kehamilan?	1. Sekarang menggunakan 2. Pernah/ Tidak menggunakan lagi → **Dc06** 3. Tidak pernah sama sekali → **Dc06**	☐
Dc02	Alat/cara KB apakah, yang sedang **[NAMA] dan pasangan** pakai? Bacakan poin a sampai k. **ISIKAN KODE 1=YA ATAU 2 = TIDAK** a. Sterilisasi wanita ☐ e. Suntikan ☐ i. Pantang berkala/kalender ☐ b. Sterilisasi pria ☐ f. Kondom ☐ j. Sanggama terputus ☐ c. Pil ☐ g. Diafragma/intravag ☐ k. Lainnya (sebutkan: ☐ d. IUD/AKDR/Spiral ☐ h. Amenorrhea Laktasi ☐		
Dc03	a.Apakah ada biaya yang dikeluarkan untuk memperoleh pelayanan alat/cara KB yang digunakan sekarang?	1. Ya 2. Tidak → **Dc04**	☐
	b.Apakah **[NAMA]** mengetahui jumlah rupiah yang dibayarkan	1. Ya 2. Tidak → **Dc04**	☐
	c. Jika ya, tuliskan jumlahnya dalam rupiah	Rp ☐.☐☐☐.☐☐☐	
Dc04	Dimana **[NAMA]** mendapat pelayanan cara/alat KB tersebut? 01. RS Pemerintah 02. RS Swasta 03. RS Bersalin 04. Puskesmas 05. Puskesmas pembantu 06. Klinik 07. Tim KB Keliling/Tim Medis Keliling 08. Dokter Praktek 09. Bidan Praktek 10. Perawat Praktek 11. Polindes /Poskesdes 12. Lainnya,tuliskan.....		☐☐
Dc05	Sudah berapa lama **[NAMA]** menggunakan (alat/cara KB yang digunakan sekarang) secara terus menerus?	.....(Bulan)	☐☐☐

LANJUTKAN KE Dc08.
Dc06-Dc07 khusus untuk responden yang tidak menggunakan alat/cara KB.

Dc06	Alasan utama tidak menggunakan alat/cara KB ? **JANGAN MEMBACAKAN ALTERNATIF JAWABAN**	01. Dilarang pasangan 02. Dilarang agama 03. Mahal 04. Sulit diperoleh 05. Belum punya anak 06. Ingin punya anak 07. Takut efek samping 08. Tidak menginginkan 09. Tidak perlu lagi 10. Lainnya	☐☐

Jika jawaban Dc01=2, lanjutkan ke P.Dc07
Jika jawaban Dc01=3,lanjutkan ke P.Dc08

Dc07	Sudah berapa lama tidak menggunakan alat/cara KB ?	.....(bulan)	☐☐☐
Dc08	Dalam 12 bulan terakhir, apakah **[NAMA]** pernah melakukan pemeriksaan alat kelamin kepada tenaga kesehatan (Pap Smear/IVA Inspekulo Visual Asam cuka) ?	1. Ya 2. Tidak 8. Tidak tahu	☐

Dd. KEHAMILAN, PERSALINAN DAN PEMERIKSAAN SESUDAH MELAHIRKAN (PEREMPUAN PERNAH KAWIN USIA 10-59 TAHUN)

Dd01	Apakah ibu pernah hamil dan melahirkan, selama periode waktu 1 Januari 2005 sampai sekarang?	1. Ya 2. Tidak → **De01**	☐

Sekarang saya ingin menanyakan tentang pengalaman ibu waktu hamil dan bersalin khususnya untuk anak yang lahir terakhir.

Dd02	a. Tuliskan **[NAMA ANAK] dan nomor urut ART anak terakhir** (Jika tidak ada dalam daftar ART tuliskan kode 00)	Nama ART	Nomor urut ART: ☐☐
	b. Berapa umur ibu saat melahirkan **[NAMA ANAK] terakhir**	..... tahun	☐☐
Dd03	Urutan kelahiran **[NAMA ANAK] terakhir** dari semua yang dilahirkan hidup	Anak ke.....	☐☐
Dd04	Jarak kelahiran **[NAMA ANAK] terakhir** dengan anak sebelumnya **(Tulis "000" jika anak pertama)**	..... bulan	☐☐☐

Dd05	Status anak terakhir	1. Hidup → **Dd10** 2. Meninggal	☐

PERTANYAAN Dd06-Dd09f KHUSUS UNTUK ANAK TERAKHIR YANG MENINGGAL

Dd06	Jika sudah meninggal, umur saat meninggal: Lingkari kode 1, jika meninggal pada usia < 1 bulan, isikan dlm hari Lingkari kode 2, jika meninggal pada usia 1-23 bulan, isikan dlm bulan Lingkari kode 3, jika meninggal >= 2 tahun (24 bulan ke atas), isikan dalam tahun	1. ..... HARI 2. ..... BULAN 3. .....TAHUN	1. ☐☐ 2. ☐☐ 3. ☐☐
Dd07	Apakah **[NAMA ANAK]** ditimbang ketika dilahirkan?	1. Ya 2. Tidak →**Dd09a** 8.Tidak tahu → **Dd09a**	☐
Dd08	Berapakah berat badan **[NAMA ANAK]** ketika dilahirkan? Catat Berat Badan dari KMS/Buku KIA, Jika Ada **JIKA TIDAK TAHU ISIKAN KODE 8888**	1. Gram berdasarkan ingatan responden 2. Gram dari KMS/Buku KIA	☐☐☐☐ ☐☐☐☐
Dd09	a. Siapa yang menolong ibu ketika melahirkan **[NAMA ANAK]** ? 1. Dokter Kandungan 5. Dukun 2. Dokter Umum 6. Keluarga/teman 3. Bidan 7. Lainnya, tuliskan..... 4. Perawat/Mantri	a.Penolong Pertama b.Penolong terakhir	☐ ☐
	b. Dimana **[NAMA]** dilahirkan 01. Rumah Sakit Pemerintah 05. Puskesmas pembantu 09. Di rumah 02. Rumah Sakit Swasta 06. Praktek dokter 10. Lainnya, ... 03. Rumah Sakit Bersalin/ Rumah Bersalin 07. Praktek bidan Tuliskan 04. Puskesmas 08. Polindes/Poskesdes		☐☐
	c.Setelah **[NAMA ANAK]** lahir, apakah dilakukan pemeriksaan kesehatan?	1. Ya 2. Tidak →**Dd10** 8.Tidak tahu → **Dd10**	☐
	d. Apakah **[NAMA]** mendapat pelayanan kesehatan (dikunjungi/mengunjungi) pada: (**BACAKAN BUTIR a SAMPAI DENGAN d**) **ISIKAN DENGAN KODE 1=YA 2=TIDAK 7=TIDAK BERLAKU 8 = TIDAK TAHU** a. 6–48 jam setelah lahir ☐ b. 3–7 hari setelah lahir ☐ c. 8–28 hari setelah lahir ☐ d. >28 hari setelah lahir ☐		
	e.Siapa yang memeriksa **[NAMA ANAK]** saat itu? **PETUGAS KESEHATAN:** 1. Dokter anak 4. Bidan 2. Dokter umum 5. Bidan Desa 3. Perawat **ORANG LAIN:** 6. Dukun bayi/paraji 7. Lainnya _____ (tuliskan)		☐
	f.Dimana Pemeriksaan itu dilakukan? 01. RS Pemerintah 05. Posyandu 09. Polindes/Poskesdes 02. RS Swasta 06. Klinik/ Dokter Praktek 10. Di rumah 03. RS Bersalin 07. Klinik / Bidan Praktek 11. Lainnya, tuliskan..... 04. Puskesmas/ Pustu 08. Perawat Praktek		☐☐
Dd10	Pada saat ibu mengandung **[NAMA ANAK]**, apakah ibu memang ingin hamil waktu itu, menginginkan kemudian, atau sama sekali tidak menginginkan anak (lagi)?	1.Ya, menginginkan kemudian 2. Ya, menginginkan → **Dd12** 3.Tidak ingin anak lagi → **Dd12**	☐
Dd11	Berapa lama jarak kelahiran yang ibu inginkan sebelum punya anak **[NAMA ANAK]**? **JIKA TIDAK TAHU ISIKAN KODE 888**	.....bulan	☐☐☐
Dd12	Pada saat mengandung **[NAMA ANAK]** kemana ibu memeriksakan kehamilan?	1.Tenaga kesehatan 2. Tenaga kesehatan dan dukun 3. Dukun →**Dd27** 4. Tidak periksa →**Dd27**	☐
Dd13	Siapa yang memeriksakan kandungan ibu? (Tanyakan siapa saja yang memeriksa kehamilan. Jawaban bisa lebih dari 1). **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK** a. Dokter Kandungan ☐ c. Bidan ☐ e. Lainnya ☐ b. Dokter Umum ☐ d. Perawat/Mantri ☐		

Dd14	Apakah ibu diberi Kartu Menuju Sehat Ibu Hamil (KMS BUMIL) atau Buku KIA Jika Ya, dapatkah ibu memperlihatkan KMS BUMIL/Buku KIA?	1. Ya, diperlihatkan 2. Ya, tidak diperlihatkan 3. Tidak	☐
Dd15	Dimana Ibu memeriksa kehamilan ? **(BACAKAN POINT a SAMPAI DENGAN k)** **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK** a. RS Pemerintah ☐ e. Pustu ☐ i. Polindes / Poskesdes ☐ b. RS Swasta ☐ f. Klinik / Dokter Praktek ☐ j. Posyandu ☐ c. RS Bersalin ☐ g. Klinik / Bidan Praktek ☐ k. Lainnya, tuliskan..... ☐ d. Puskesmas ☐ h. Perawat Praktek ☐		
Dd16	Selama ibu mengandung **[NAMA ANAK]**, berapa kali ibu memeriksakan kehamilan? **JIKA TIDAK TAHU ISIKAN KODE "88"**	--------- Kali	☐☐
Dd17	Berapa bulan umur kandungan **[NAMA ANAK]** ketika pertama kali memeriksakan kehamilan oleh tenaga kesehatan? **JIKA TIDAK TAHU ISIKAN KODE "88"**	-------- Bulan	☐☐
Dd18	Berapa kali ibu memeriksakan kehamilan :	Jumlah pemeriksaan: a. Dalam 3 bulan pertama .....kali b. Antara 4-6 bulan: .....kali c. Antara 7 bulan sampai melahirkan .....kali	☐☐ ☐☐ ☐☐
Dd19	Berapa bulan umur kehamilan **[NAMA ANAK]** ketika ibu terakhir kali memeriksakan kehamilan **[NAMA ANAK]**? **JIKA TIDAK TAHU ISIKAN KODE 88**	.....Bulan	☐☐
Dd20	Selama kehamilan (**NAMA ANAK**) apakah ibu:? **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK** a. Ditimbang berat badannya ☐ d. Diperiksa air seninya ☐ b. Diukur tinggi badannya ☐ e. Diperiksa darahnya ☐ c. Diukur tekanan darahnya ☐ f. Diperiksa (diraba) perutnya ☐		
Dd21	Pada saat pemeriksaan, apakah ibu diberitahu tanda-tanda bahaya (komplikasi) dalam kehamilan?	1. Ya 2. Tidak→**Dd23** 8. Tidak tahu →**Dd23**	☐
Dd22	Pada saat pemeriksaan, apakah ibu diberitahu kemana harus pergi untuk mendapatkan pertolongan jika mengalami bahaya (komplikasi) kehamilan?	1. Ya 2. Tidak 8. Tidak tahu	☐
Dd23	Selama ibu mengandung (**NAMA ANAK**) apakah ibu pernah mendapat suntikan di lengan atas untuk mencegah bayi dari penyakit tetanus, atau kejang-kejang setelah lahir?	1. Ya 2. Tidak →**Dd25** 8. Tidak tahu→**Dd25**	☐
Dd24	Selama mengandung (**NAMA ANAK**) berapa kali ibu mendapatkan suntikan tersebut? (JIKA TIDAK TAHU ISIKAN "88")	.....kali	☐☐
Dd25	Selama mengandung (**NAMA ANAK**), apakah ibu mendapat atau membeli pil zat besi?	1. Ya 2. Tidak →**Dd27** 8. Tidak tahu→**Dd27**	☐

Dd26	Selama mengandung (**NAMA ANAK**) berapa hari ibu minum pil zat besi? Jika jawaban responden tidak berupa angka, tanyakan untuk memperkirakan jumlah hari. (**JIKA TIDAK TAHU ISIKAN "98"**)	.....hari	☐☐
Dd27	Selama kehamilan (NAMA), apakah ibu membicarakan dengan seseorang mengenai: **(ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK)** a. Dimana ibu akan melahirkan/bersalin? ☐ b. Angkutan/transportasi ke tempat persalinan? ☐ c. Siapa yang akan menolong persalinan? ☐ d. Biaya persalinan? ☐ e. Donor darah jika perlu? ☐		
Dd28	Apa ibu mengalami tanda-tanda bahaya (komplikasi) selama kehamilan?	1. Ya 2. Tidak→**Dd31** 8. Tidak Tahu → **Dd31**	☐
Dd29	Apa sajakah tanda-tanda bahaya (komplikasi) kehamilan tersebut? **JAWABAN JANGAN DIBACAKAN, ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK** a. Mules hebat sebelum 9 bulan ☐ b. Perdarahan ☐ c. Demam Tinggi ☐ d. Kejang-kejang dan pingsan ☐ e. Lainnya, tuliskan..... ☐		
Dd30	Apa yang dilakukan untuk mengatasi masalah tersebut? **JAWABAN JANGAN DIBACAKAN, ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK** a. Tidak melakukan apa-apa ☐ b. Istirahat ☐ c. Minum Obat ☐ d. Minum Jamu ☐ e. Ke Dukun ☐ f. Ke Bidan ☐ g. Ke Dokter ☐ h. Ke Unit pelayanan kesehatan ☐ i. Lainnya ☐		
Dd31	Apakah (**NAMA ANAK**) dilahirkan dengan operasi perut (cesaria)?	1. Ya 2. Tidak	☐
Dd32	Berapa umur kehamilan (**NAMA ANAK**) pada waktu lahir ?	..... bulan	☐☐
Dd33	Ketika (**NAMA ANAK**) lahir, apakah ia: sangat besar, lebih besar dari rata-rata, rata-rata, lebih kecil dari rata-rata, atau sangat kecil?	1. Sangat besar 2. Lebih besar dari rata-rata 3. Rata-rata, 4. Lebih kecil dari rata-rata, 5. Sangat kecil	☐
Dd34	Pada saat ibu akan melahirkan (**NAMA ANAK**), apakah ibu mengalami: **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK atau 8=TIDAK TAHU** a. Mules yang kuat & teratur lebih dari sehari semalam ? a. ☐ b. Perdarahan lebih banyak dibanding biasanya (lebih dari 2 kain) ? b. ☐ c. Suhu badan tinggi dan atau keluar lendir berbau? c. ☐ d. Kejang – kejang dan/atau pingsan ? d. ☐ e. Keluar air ketuban lebih dari 6 jam sebelum anak lahir ? e. ☐ f. Apakah ada kesulitan/komplikasi lain ? Jika ada, tuliskan _____ f. ☐		
Dd35	Pada saat ibu melahirkan (**NAMA ANAK**), apakah ibu didiagnosa : **ISIKAN KODE JAWABAN DENGAN 1=YA, 2=TIDAK ATAU 8=Tidak Tahu** a. Perdarahan ☐ b. Preeklamsi/Eklamsi (Bengkak dua tungkai & darah tinggi/ kejang) ☐ c. Rahim Sobek ☐ d. Jalan lahir tertutup ☐ e. Ketuban Pecah Dini ☐ f. Hamil diluar rahim ☐ g. Lainnya ☐		

JIKA Dd35 POINT a s/d g SALAH SATU SAJA MENJAWAB "YA" MAKA LANJUTKAN KE Dd36
JIKA Dd35 POINT a s/d g SEMUA MENJAWAB "TIDAK" ATAU "TIDAK TAHU" MAKA LANJUTKAN KE Dd37

Dd36	Siapa yang mendiagnosa ibu mengalami komplikasi tersebut di atas (seperti pada Dd35) ? 1. Dokter Kandungan 3. Bidan 5. Dukun 7. Lainnya, tuliskan: 2. Dokter Umum 4. Perawat/Mantri 6. Keluarga/teman		☐
Dd37	Setelah (**NAMA ANAK**) lahir, apakah ada yang memeriksa kesehatan ibu ?	1. Ya 2. Tidak → **Dd41**	☐
Dd38	Setelah melahirkan, hari ke berapa ibu diperiksa kesehatannya **pertama kali? (JIKA TIDAK TAHU ISIKAN "888")**	Hari ke.....	☐☐☐
Dd39	Siapa yang memeriksa kesehatan Ibu setelah melahirkan ? **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK (PILIHAN HANYA SATU)** a. Dokter Kandungan ☐ c. Bidan ☐ e. Dukun ☐ b. Dokter Umum ☐ d. Perawat ☐ f.Lainnya,tuliskan..... ☐		
Dd40	Dimana Pemeriksaan itu dilakukan? 01. RS Pemerintah 05. Posyandu 09. Polindes/Poskesdes 02. RS Swasta 06. Klinik/ Dokter Praktek 10. Di rumah 03. RS Bersalin 07. Klinik / Bidan Praktek 11. Lainnya, tuliskan..... 04. Puskesmas/ Pustu 08. Perawat Praktek		☐☐
Dd41	Apakah setelah melahirkan ibu mengalami? **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK 8=TIDAK TAHU** a. Perdarahan (lebih dari 2 kain) ☐ c. Kejang-kejang ☐ e. Rasa Nyeri di Payudara ☐ b. Pingsan ☐ d. Demam Tinggi ☐ f. Rasa Sedih dan tertekan ☐ g. Lainnya,sebutkan..... ☐		

JIKA Dd41 POINT a s/d g SALAH SATU SAJA MENJAWAB "YA" MAKA LANJUTKAN KE Dd42
JIKA Dd41 POINT a s/d g SEMUA MENJAWAB "TIDAK" ATAU "TIDAK TAHU" MAKA LANJUTKAN KE Dd43

Dd42	Bila mengalami hal tersebut di atas, apa yang dilakukan: **ISIKAN KODE JAWABAN DENGAN 1=YA ATAU 2=TIDAK** a. Tidak melakukan apa-apa ☐ d. Minum jamu ☐ g. Ke Praktek Dokter ☐ b. Istirahat ☐ e. Ke dukun ☐ h. Ke Puskesmas/ Pustu ☐ c. Minum obat ☐ f. Ke Praktek Bidan ☐ i. Ke Polindes/Poskesdes ☐ j. Lainnya, sebutkan ..... ☐		
Dd43	**Selama masa nifas apakah [NAMA] mendapatkan vitamin A kapsul warna merah. TUNJUKKAN KARTU PERAGA**	1. Ya 2. Tidak 8. Tidak tahu	☐

De. KEGUGURAN dan KEHAMILAN YANG TIDAK DIINGINKAN (Khusus Perempuan Pernah Kawin usia 10-59 tahun)
(PERTANYAAN LANGSUNG DITANYAKAN KEPADA RESPONDEN/ UPAYAKAN TANPA PENDAMPING)

Sekarang saya ingin mengajukan pertanyaan tentang pengalaman kehamilan lima tahun terakhir (sejak 1 Januari 2005)

De01	Dalam lima tahun terakhir, apakah ada kehamilan yang berakhir pada usia kehamilan < 22 minggu (< 5 bulan) ?	1. Ya, pernah 2. Tidak pernah → **De05**	☐
De02	Apakah ada upaya untuk mengakhiri kehamilan tersebut?	1. Ya 2. Tidak → **De05**	☐
De03	Jika Ya, upaya apa yang dilakukan untuk mengakhiri kehamilan tersebut? (jawaban boleh lebih dari satu jawaban). Isikan kode jawaban 1= Ya atau 2 = Tidak a. Jamu ☐ c. Pijat ☐ e. Sedot ☐ g. Lainnya, sebutkan ..... ☐ b. Pil ☐ d. Suntik ☐ f. Kuret ☐		

De04	Siapakah yang menolong saat terjadinya keguguran tersebut ?	1. Dokter 2. Bidan 3. Dukun	4. Sendiri 5. Lainnya, Sebutkan	☐
De05	Dalam lima tahun terakhir apakah ada kehamilan yang tidak direncanakan?	1. Ya 2. Tidak →**De11**		☐
De06	Apakah ada upaya untuk mengakhiri kehamilan tersebut?	1. Ya 2. Tidak → **De11**		☐
De07	Jika Ya, upaya apa yang dilakukan untuk mengakhiri kehamilan tersebut? (jawaban boleh lebih dari satu jawaban). Isikan kode jawaban 1= Ya atau 2 = Tidak a. Jamu ☐ c. Pijat ☐ e. Sedot ☐ g. Lainnya, ☐ b. Pil ☐ d. Suntik ☐ f. Kuret ☐ Sebutkan.....			
De08	Apakah ada yang membantu ?	1. Dokter 2. Bidan 3. Dukun	4. Sendiri 5. Lainnya, Sebutkan	☐
De09	Apakah upaya mengakhiri kehamilan tersebut berhasil?	1. Ya 2.Tidak → **De11**		☐
De10	Apakah alasan untuk mengakhiri kehamilan	1. Masalah kesehatan 2. Terlalu banyak anak 3. Terlalu dekat 4. Usia	5. Alasan ekonomi 6. Kesibukan pekerjaan 7. Lainnya (sebutkan: .....)	☐

De11	**JIKA LAKI-LAKI ATAU PEREMPUAN USIA 10-24 TAHUN → KE P.Df01** **JIKA LAKI-LAKI ATAU PEREMPUAN USIA 25 TAHUN KE ATAS → BLOK IX. KONSUMSI**

Df. PERILAKU SEKSUAL (Khusus ART Usia 10-24 tahun)

BAGIAN INI HARUS DIJAWAB SENDIRI OLEH RESPONDEN (TIDAK BOLEH ADA PENDAMPING)

Sekarang saya ingin mengajukan enam pertanyaan (Df01 – Df06) tentang seksual. Mohon maaf jika hal ini menyangkut hal yang pribadi

Df01	Apakah **[NAMA]** pernah melakukan hubungan seksual (sanggama)?	1. Ya 2. Tidak →**Df06**	☐
Df02	Dengan siapa **[NAMA]** Melakukan hubungan seksual pertama kali **JANGAN MEMBACAKAN ALTERNATIF JAWABAN**	1. Suami/ istri 2. Teman 3. Pacar 4. Keluarga 5. Pekerja Seks Komersial 6. Lainnya, sebutkan...	☐
Df03	Berapa umur **[NAMA]** ketika pertama kali berhubungan seksual (sanggama)	Umur dalam tahun ..... tahun Tidak tahu 88 →**Df06**	☐☐
Df04	Pada waktu pertama kali melakukan hubungan seksual tersebut, apakah **[NAMA]** atau pasangan memakai alat kontrasepsi/cara KB untuk mencegah kehamilan?	1. Ya 2. Tidak →**Df06** 8. Tidak tahu/ tidak ingat →**Df06**	☐
Df05	Penggunaan alat kontrasepsi/alat/cara KB apa yang **[NAMA]** atau pasangan pakai saat pertama kali berhubungan seksual? **JANGAN MEMBACAKAN ALTERNATIF JAWABAN**	1. Kondom 2. Pil 3. Diafragma/intravag 4. Sanggama terputus 5. Lainnya, tuliskan.....	☐
Df06	Apakah **[NAMA]** pernah mendapat penyuluhan tentang kesehatan reproduksi?	1. Ya 2. Tidak	☐

LANJUTKAN KE BLOK IX. KONSUMSI

E. KESEHATAN ANAK

Ea. KESEHATAN BAYI DAN ANAK BALITA (KHUSUS ART UMUR 0 – 59 BULAN)

Ea01 Tuliskan nama dan nomor urut ibu kandung [NAMA]
JIKA IBU KANDUNG TIDAK TINGGAL DI RT SAMPEL (BUKAN ART) ISIKAN"00"
Nama Ibu kandung ……. Nomor urut ibu: ☐☐

Ea02 a. Jika ibu kandung bukan sebagai ART, apakah ibu kandung [NAMA]
1. Masih hidup→**Ea03** 8. Tidak tahu→**Ea03**
2. Sudah meninggal ☐

b.Jika ibu kandung [NAMA] sudah meninggal, apakah meninggal pada saat
1.Kehamilan 3. Kurang dari 2 bulan setelah persalinan 4. Kecelakaan
2.Persalinan 5. Lainnya ☐

Ea03 a.Siapa yang menolong proses persalinan (NAMA)? **[Isikan kode jawaban langsung ke kotak]**
1. Dokter 3. Tenaga paramedis lain 5. Famili/keluarga
2. Bidan 4. Dukun bersalin 6. Lainnya, sebutkan ……
a. Penolong pertama ☐
b. Penolong terakhir ☐

b.Dimana [NAMA] dilahirkan : ☐☐
01. Rumah Sakit Pemerintah 05. Puskesmas pembantu 09. Di rumah
02. Rumah Sakit Swasta 06. Praktek dokter 10. Lainnya, ……
03. Rumah Sakit Bersalin/ Rumah Bersalin 07. Praktek bidan
04. Puskesmas 08. Polindes/Poskesdes

Ea04 Apakah ketika lahir [NAMA] ditimbang (Berat bayi lahir dalam kurun waktu 48 jam)
1. Ya 2. Tidak →**Ea07**
8. **Tidak Tahu → Ea07** ☐

Ea05 Bila "Ya", berapa berat badan [NAMA] ketika lahir (Tulis dalam satuan gram) ……. gram ☐☐☐☐

Ea06 Dari mana sumber informasi berat badan [NAMA] ketika lahir ☐
1. KMS/Buku KIA/Buku Catatan Kesehatan/catatan kelahiran. 2.Pengakuan atau ingatan Ibu/ ART lain

Ea07 Obat/ ramuan apa yang digunakan untuk merawat tali pusar [NAMA] pada saat baru lahir ☐
1. Tidak diberi apa-apa 3. Obat tabur (berbentuk bubuk) 8. Tidak tahu
2. Betadine/ alkohol 4. Ramuan/ obat tradisional

Ea08 Apakah **[NAMA]** mendapat pelayanan kesehatan (dikunjungi/mengunjungi) pada: **(BACAKAN BUTIR a SAMPAI DENGAN d)**
ISIKAN DENGAN KODE 1 = YA 2 = TIDAK 7 = TIDAK BERLAKU 8 = TIDAK TAHU

a. 6–48 jam setelah lahir ☐	b. 3–7 hari setelah lahir ☐	c. 8–28 hari setelah lahir ☐	d. >28 hari setelah lahir ☐

JIKA KODE JAWABAN Ea08 (a SAMPAI DENGAN d) SEMUANYA 2 ATAU 7 ATAU 8 →Ea11

Ea09 Dimana **[NAMA]** mendapat pelayanan kesehatan pada saat itu?
1. Rumah Sakit Pemerintah 6. PoliklinikSwasta
2. Rumah Sakit Swasta 7. Praktik Tenaga Kesehatan
3. Rumah Sakit Bersalin 8. Di Rumah
4. Puskesmas/Pustu/Pusling
5. Poskesdes/Posyandu 9. Tidak berlaku

a. 6 – 48 jam setelah lahir ☐
b. 3 – 7 hari setelah lahir ☐
c. 8 – 28 hari setelah lahir ☐
d. > 28 hari setelah lahir ☐

Ea10 Jenis pelayanan kesehatan yang diterima pada saat bayi **[NAMA]** berusia **6 – 48 jam** setelah lahir:
ISIKAN DENGAN KODE 1 = YA ATAU 2 = TIDAK ATAU 8 = TIDAK TAHU
(JIKA PADA UMUR 6 - 48 JAM [NAMA] TIDAK DIPERIKSA, SEMUA DIISI KODE"2")

a. Diberi imunisasi Hepatitis B (HB-0) ☐ c. Vitamin K injeksi ☐
b. Diberi salep mata/tetes mata ☐ d. Lainnya, sebutkan …… ☐

Ea11 Sejak **[NAMA]** dilahirkan sampai berumur 28 hari, Apakah **[NAMA]** pernah menderita sakit?
1. Ya 2. Tidak →**Ea13**
8. Tidak Tahu → **Ea13** ☐

Ea12 Pada saat sakit tersebut apakah **[NAMA]** berobat ke tenaga kesehatan?
1. Ya 2. Tidak
8. Tidak Tahu ☐

Ea13 Apakah **[NAMA]** memiliki catatan kesehatan berupa KMS ☐
1. Ya, dapat menunjukkan 3. Pernah memiliki, tetapi sudah hilang
2. Ya, tidak dapat menunjukkan (disimpan kader/ bidan/ di Posyandu) 4. Tidak pernah memiliki

Ea14	Apakah **[NAMA]** memiliki catatan kesehatan berupa Buku KIA 1. Ya, dapat menunjukkan 2. Ya, tidak dapat menunjukkan (disimpan kader/ bidan/ di Posyandu) 3. Pernah memiliki, tetapi sudah hilang 4. Tidak pernah memiliki	☐
Ea15	Apakah **[NAMA]** memiliki catatan kesehatan lain seperti *Buku Catatan Kesehatan Anak (Selain KMS dan Buku KIA)* 1. Ya, dapat menunjukkan 2. Ya, tidak dapat menunjukkan (disimpan di tempat lain) 3. Pernah memiliki, tetapi sudah hilang 4. Tidak pernah memiliki	☐

JIKA KODE JAWABAN Ea13 S/D Ea15 SEMUANYA BERKODE 2 ATAU 3 ATAU 4 → Ea18

Ea16	Apakah dalam KMS/ Buku KIA/ Buku Catatan Kesehatan Anak [NAMA] ada catatan imunisasi	1. Ya 2. Tidak → **Ea18**	☐

Ea17 Salin dari **KMS/BUKU KIA/CATATAN KESEHATAN ANAK**, tanggal...../ bulan..../ tahun..... untuk setiap jenis imunisasi.
ISIKAN "77" DI KOLOM 'TGL/BLN/THN', JIKA UMUR ANAK BELUM WAKTUNYA DIBERIKAN
ISIKAN "88" DI KOLOM 'TGL/BLN/THN', JIKA KARTU MENUNJUKKAN BAHWA IMUNISASI DIBERIKAN, TETAPI TANGGAL/ BULAN/ TAHUN-NYA TIDAK ADA.
ISIKAN "99" DI KOLOM 'TGL/BLN/THN', JIKA IMUNISASI TIDAK DIBERIKAN

a. Hepatiitis B 0	☐☐/☐☐/☐☐	f. Polio 1	☐☐/☐☐/☐☐
b. BCG	☐☐/☐☐/☐☐	g. Polio 2	☐☐/☐☐/☐☐
c. DPT –HB Combo1	☐☐/☐☐/☐☐	h. Polio 3	☐☐/☐☐/☐☐
d. DPT-HB Combo 2	☐☐/☐☐/☐☐	i. Polio 4	☐☐/☐☐/☐☐
e. DPT-HB Combo 3	☐☐/☐☐/☐☐	j. Campak	☐☐/☐☐/☐☐

JIKA CATATAN IMUNISASI ART LENGKAP, LANJUTKAN KE Ea19
JIKA CATATAN IMUNISASI ART TIDAK LENGKAP, LANJUTKAN KE Ea18

Ea18 Apakah **[NAMA]** pernah mendapat imunisasi berikut : **(INFORMASI DAPAT DIPEROLEH DARI BERBAGAI SUMBER)**

a. Imunisasi Hepatitis B-0, biasanya diberikan sesaat setelah bayi lahir sampai bayi berumur 7 hari yang disuntikkan di paha bayi?	1. Ya 2. Tidak → **Ea18c** 8. Tidak tahu → **Ea18c**	☐
b. Pada umur berapa hari **[NAMA]** diimunisasi Hepatitis B 0? **JIKA TIDAK TAHU ISIKAN KODE "88" UNTUK HARI** **(biasanya HB-0 diberikan 0-7 hari)**	..... hari	☐☐
c. Imunisasi BCG yang biasanya mulai diberikan umur 1 hari dan disuntikkan di lengan atas atau paha serta meninggalkan bekas (scar) di bawah kulit?	1. Ya 2. Tidak → **Ea18e** 8. Tidak tahu → **Ea18e**	☐
d. Pada umur berapa **[NAMA]** diimunisasi BCG? **(ISI HARI ATAU BULAN) JIKA TIDAK TAHU ISIKAN KODE "88" UNTUK HARI DAN BULAN**	..... hari	☐☐
	..... bulan	☐☐
e. Imunisasi polio, cairan merah muda atau putih yang biasanya mulai diberikan pada umur 2 bulan dan diteteskan ke mulut?	1. Ya 2. Tidak → **Ea18h** 7. Belum waktunya (umur belum 2 bulan) → **Ea18h** 8. Tidak Tahu → **Ea18h**	☐
f. Pada umur berapa **[NAMA]** pertama kali diimunisasi polio? **JIKA TIDAK TAHU ISIKAN KODE "88" UNTUK BULAN**	.....bulan	☐☐
g. Berapa kali **[NAMA]** diimunisasi polio?	..... kali	☐
h. Imunisasi DPT-HB combo (Diphteri Pertusis Tetanus-Hepatitis B combo) yang biasanya disuntikkan di paha dan biasanya mulai diberikan pada saat anak berusia 2 bulan bersama dengan polio?	1. Ya 2. Tidak → **Ea18k** 7. Belum waktunya (umur belum 2 bulan) → **Ea18k** 8. Tidak tahu → **Ea18k**	☐
i. Pada umur berapa (NAMA) pertama kali diimunisasi DPT-HB Combo. **JIKA TIDAK TAHU ISIKAN KODE "88"**	..... bulan	☐☐
j. Berapa kali **[NAMA]** diimunisasi DPT-HB Combo?	..... kali	☐

	k. Imunisasi campak yang biasanya mulai diberikan umur 9 bulan dan disuntikkan di paha serta diberikan satu kali?	1. Ya 2. Tidak 7. Belum waktunya (umur belum 9 bulan) 8. Tidak tahu	☐
Ea19	Dalam 6 bulan terakhir, berapa kali **[NAMA]** ditimbang? **JIKA TIDAK PERNAH DITIMBANG, ISI KODE "00" ATAU JIKA "TIDAK TAHU", ISI KODE "88" → Ea21**	..... kali	☐☐
Ea20	Dimana **[NAMA]** paling sering ditimbang? 1. Rumah Sakit 2. Puskesmas/Pustu 3. Polindes 4. Posyandu 5. Poskesdes 6. Lainnya, sebutkan		☐
Ea21	Apakah dalam 6 bulan terakhir **[NAMA]** mendapatkan kapsul vitamin A ? (**GUNAKAN KARTU PERAGA**)	1. Ya 7. Belum waktunya (umur belum 6 bulan) 2. Tidak 8. Tidak Tahu	☐

JIKA ART BERUMUR 24 – 59 BULAN → Ea22
JIKA ART BERUMUR 0 – 23 BULAN → Eb01

Ea22 KHUSUS ART BERUMUR 24 – 59 BULAN

Ea22 Apakah [NAMA] memiliki kelainan/cacat : **ISIKAN DENGAN KODE 1=YA ATAU 2=TIDAK**

a. Tuna netra (penglihatan)→ **OBSERVASI**	☐	e. Tuna daksa (tubuh)→ **OBSERVASI**	☐
b. Tuna rungu (pendengaran)→ **OBSERVASI**	☐	*f. Down Syndrome* → **GUNAKAN KARTU PERAGA**	☐
c. Tuna wicara (berbicara)→ **OBSERVASI**	☐	*g. Cerebral Palsy* → **GUNAKAN KARTU PERAGA**	☐
d. Tuna grahita (mental)→ **OBSERVASI**	☐	*h.* Lainnya, sebutkan.....	☐

LANJUTKAN KE BLOK IX. KONSUMSI

Eb. ASI DAN MP-ASI (KHUSUS ART UMUR 0 – 23 BULAN)

Eb01	Apakah **[NAMA]** pernah disusui (diberi ASI)?	1. Ya 2. Tidak → **Eb09**	☐
Eb02	Kapan **[NAMA]** mulai disusui oleh ibu untuk yang pertama kali, setelah dilahirkan? **JIKA KURANG DARI 1 JAM, TULIS 00;** **JIKA KURANG DARI 24 JAM, TULIS DALAM JAM;** **JIKA 24 JAM ATAU LEBIH TULIS DALAM HARI**		
	a. ..... jam ☐☐	b. ..... hari	☐☐
Eb03	Apa yang dilakukan [Ibu dari NAMA] terhadap kolustrum (ASI yang pertama keluar, biasanya encer, bening dan atau berwarna kekuning-kuningan)? 1. Diberikan semua kepada bayi 2. Dibuang sedikit kemudian ASI diberikan kepada bayi 3. Dibuang semua, kemudian ASI diberikan kepada bayi 8. Tidak Tahu		☐
Eb04	Apakah sebelum disusui yang pertama kali atau sebelum ASI keluar, [NAMA] diberi minuman (cairan) atau makanan selain ASI?	1. Ya 2. Tidak →**Eb06** 8. Tidak Tahu →**Eb06**	☐
Eb05	Minuman/makanan apa sajakah yang diberikan kepada **[NAMA] sebelum ASI keluar**? **BACAKAN DAN ISIKAN DENGAN KODE 1= YA ATAU 2=TIDAK**		
	a. Susu formula ☐ e. Air Tajin ☐ i. Madu/ Madu + air ☐ b. Susu non formula ☐ f. Air kelapa ☐ j. Pisang dihaluskan ☐ c. Air putih ☐ g. Sari buah/jus buah ☐ k. Nasi dihaluskan ☐ d. Air gula ☐ h. Teh manis ☐ l. Lainnya, sebutkan ..... ☐		
Eb06	Apakah saat ini, **[NAMA]** masih disusui?	1.Ya →**Eb08** 2. Tidak	☐
Eb07	Pada umur berapa bulan **[NAMA]** disapih/mulai tidak disusui lagi? **Bila tidak tahu tulis 88**	..... bulan →**Eb09**	☐☐
Eb08	Apakah dalam 24 jam terakhir **[NAMA] hanya mendapatkan air susu ibu** (ASI) saja *(tidak diberi cairan/makanan selain ASI)*	1. Ya 2. Tidak	☐

Eb09	Sejak kapan *(pada umur berapa hari/ bulan)* **[NAMA]** mulai diberi minuman (cairan) atau makanan selain ASI : 1. 0 – 7 hari 4. 2 – < 3 bulan 7. ≥ 6 bulan 2. 8 – 28 hari 5. 3 – < 4 bulan 8. Tidak tahu 3. 29 hari – < 2 bulan 6. 4 – < 6 bulan 9. Belum makanan pendamping (hanya ASI)→ **BLOK IX KONSUMSI**	☐
Eb10	Minuman (cairan) atau makanan selain ASI apa yang mulai diberikan kepada **[NAMA]** pada umur tersebut *(Sesuai jawaban Eb09)* 1. Susu formula 5. Sari buah/ juice buah 2. Susu non-formula 6. Bubur tepung/ bubur saring 3. Air tajin 7. Bubur nasi/ nasi tim/ nasi dihaluskan 4. Pisang dihaluskan 8. Lainnya, ...	☐

BLOK IX. KONSUMSI MAKAN INDIVIDU - 24 JAM YANG LALU (Semua Umur)

1.Hari wawancara : ☐
1. Senin – Jumat ;
2. Sabtu – Minggu

2.Kondisi saat wawancara : ☐
1. Biasa; 4. Puasa;
2. Hajatan; 5. Sakit;
3. Hari Raya; 6. Diit.

Waktu	Menu	Bahan Makanan	Kode Bahan Makanan	Ukuran Rumah Tangga	Berat (gram)
Pagi					
Selingan					
Siang					
Selingan					
Malam					

3. Apakah masih mendapat ASI : 1. Ya; 2. Tidak ☐ ; 4. Bila Ya, Frekuensi mendapat ASI: ☐☐ kali sehari semalam (24 jyl)

X. PENGUKURAN TINGGI/ PANJANG BADAN DAN BERAT BADAN

SEMUA UMUR

1a. Apakah ART ditimbang? 1. Ya 2. Tidak →**X2a** ☐	1b. Berat Badan (kg) ☐☐☐,☐
2a. Apakah ART diukur ? 1. Ya 2. Tidak →**XI** ☐	2b. Tinggi Badan/ Panjang Badan (cm) ☐☐☐,☐
	2c. **KHUSUS UNTUK BALITA**, Posisi Pengukuran TB/PB **1. Berdiri 2. Telentang** ☐

XI. PEMERIKSAAN LABORATORIUM

Nomor Stiker	***TEMPELKAN STIKER NOMOR (7 DIGIT) DISINI***

PEMERIKSAAN RDT (SEMUA UMUR)

1. Pemeriksaan RDT?	1. Ya 2. Tidak →**XI.6**	☐

JIKA YA, JAWABAN 2a – 5 DIKUTIP DARI FORM M1

2. a. Tanggal pengambilan darah jari ☐☐-☐☐-☐☐☐☐	b. Nama pengambil darah jari	
3. Apakah [NAMA] mengalami		
a. Panas dalam 2 hari ini?	1. Ya 2. Tidak	☐
b. Minum obat program ACT dalam 1 bulan ini?	1. Ya 2. Tidak	☐
c. Pernah sakit malaria sebelumnya dalam 1 bulan terakhir?	1. Ya 2. Tidak	☐
d. Mendapat transfusi darah 1 bulan terakhir?	1. Ya 2. Tidak	☐
e. Bermalam di luar kota 1 bulan terakhir? Sebutkan	1. Ya 2. Tidak	☐
4. a. Waktu penetesan buffer: Jam ☐☐ Menit ☐☐	b. Waktu pembacaan RDT Jam ☐☐ Menit ☐☐	
5. Hasil pemeriksaan dipstik darah (*Rapid Diagnostic Test*)	1. Negatif 2. *Plasmodium falcifarum (Pf)* 3. *Plasmodium vivax (Pv)* 4. Pf dan Pv (Mix) 5. Hasil tidak sahih	☐

SEDIAAN APUS DARAH TEBAL (SEMUA UMUR)

6. Apakah diambil Sediaan Apus Darah Tebal?	1. Ya 2. Tidak	☐

SPUTUM (KHUSUS ART UMUR ≥ 15 TAHUN)

7. Pengambilan Sputum	a. Sewaktu	1. Ya 2. Tidak	☐
	b. Pagi	1. Ya 2. Tidak	☐

Appendix 4 – Indonesian Demographic and Health Survey Questionnaire (English)

RKD1 0.IND

BASIC HEALTH RESEARCH (RISKESDAS 2010)

CONFIDENTIAL

LOCATION IDENTIFICATION (Quoted from Block I. LOCATION IDENTIFICATION RKD10.RT)								
Prov	Reg/ City	Kec	Village/Kel	K/D	Sample Code No.	Order of household member sample	Order of house hold	**LABORATORY SAMPLE 13S**
☐☐	☐☐	☐☐☐	☐☐☐	☐	☐☐☐☐☐	☐☐	☐☐☐	1.Yes 2. No ☐

VIII. INDIVIDUAL INFORMATION			
A. RESPONDENT'S IDENTIFICATION			
A01	Write name and order of Household Member /ART	Name of ART	Order of ART: ☐☐
A02	For ART at A01 < 15 years/ ill condition/adults needing accompaniment /representation, write name and order of ART who is accompanying/representing	Name of ART	Order of ART: ☐☐
A03	Date of data collecting	☐☐-☐☐-☐☐☐☐	

B. CONTAGIOUS DISEASES
[**NAME**] in the questions below refers to NAME stated in question A01 **QUESTIONS 1301-1310 ARE ASKED TO HOUSEHOLD MEMBERS AT ALL AGES**
MALARIA

B01	In the **past year,** has [**NAMA**] been diagnosed to suffer from Malaria **which was confirmed with blood test** by health practitioners (doctor/ nurse/ midwife)?	1. Once (1) 2. Twice(2) 3. ≥Three (3) times 4. No →B07	☐
B02	Has **[NAME**], also in the past 1 month, been diagnosed to suffer from Malaria **which has been tested with blood test** by health practitioners (doctor/nurse/midwife)?	1. Yes 2. No →B07	☐
B03	If the answer is Yes, where was the last test conducted?: 1. State Hospital 4. Health Clinic/ Clinic 7. Public Health Center Supporting Unit 2. Private Hospital 5. Doctor's Practice 8. Village Maternity Center. 3. Public Health Center 6. Nurse/midwife's Practice 9. Village Health Post		☐
B04	Has [**NAME**] received treatment of **artemisinin combination program medication** (ACT, see the props)?	1. Yes 2. No→B09	☐
B05	If the answer is yes, has [**NAME**] received medication within first 24 jam of suffering from fever?	1. Yes 2. No	☐
B06	Has [**NAME**] been given artemisinin combination medication (ACT) for **3 days**? 1. Yes, taken completely. 2. Yes, not completely taken, give reason		☐

CONTINUE TO B09

B07	In the past month, has [**NAME**] ever experienced fever with the chill or gradual temperature increase, could be accompanied by headache, sweating, nauseous, vomiting?	1. Yes →B09 2. No	☐
B08	In the past month, has [**NAME**] taken anti malaria medicine even **without** symptoms (fever)?	1. Yes 2. No →B11A	☐
B09	Was **Traditional remedy/herbal medicine** used for the illness/symptoms mentioned above?	1. Yes 2. No →B11A	☐
B10	If the answer is Yes, what is the name of the Traditional remedy/herbal medicine **most often** taken:	.....	

B11A	**IF ART/HOUSEHOLD MEMBER IS ≥ 15 YEARS OLD→P.B11** **IF ART/HOUSEHOLD MEMBER IS 10 YEARS OLD→P.C23** **ART/HOUSEHOLD MEMBER IS 5-9 YEARS →OLD BLOCK IX. INDIVIDUAL CONSUMPTION** **IF ART/HOUSEHOLD MEMBER IS < 5 YEARS OLD →E.TODDLERS' HEALTH**

LUNG TUBERCULOSIS (LUNG TB), ALL ART/HOUSEHOLD MEMBER AGED ≥15 YEARS OLD

B11	Has [**NAME**] been diagnosed to suffer from Lung TB through mucus test and/lung photo, by health practitioners (doctor/ nurse/ midwife)?	1 . Yes 2 . No →B17	☐
B12	**In the last 12 months**, has [**NAME]** been diagnosed to suffer from Lung TB through examination of mucus and/or lung photo, by health practitioner (doctor/ nurse/midwife)?	1 . Yes 2 . No→B17	☐
B13	Where was [**NAME**] diagnosed? 1. State Hospital 2. Private Hospital 3. Public Health Center 4. Health Centers/Clinics/ Doctor's Practice		☐
B14	After being diagnosed, where did **[NAME]** receive treatment? 1. State Hospital 4. Doctor's Practice 2. Private Hospital 5. Health Center/ Clinic 3. Public Health Center 6. No Treatment →B17		☐
B15	What kind of medicine does **[NAME]** take at present (sample of medicine is shown to the respondent): 1. Combipack/FDC (*Fixed Dose Combination*)….. 2. Not combipack/**FDC, please state if any…..**		☐
B16	How long was/is **[NAME**] given medicine? 1. Received/s medication until the end, for 6 months or more →**C01** 2. Is in the process of medication < 6 months 4. Stopped medication after 2-5 months 3. Stopped medication < 2 months 5. Did not/ take medicine		☐

B17	In the last 12 months, has **[NAME]** suffered from cough with phlegm ≥ 2 weeks accompanied by one or more symptoms: mucus with blood/ bleeding cough, weight decrease, night sweating without physical activity and fever > 1 month?	1. Yes 2. No → **C01**	☐
B18	What did/does **[NAME]** do to overcome the above symptoms: 1. Still continues medication of Lung TB program → **C01** 2. Returned/returns to health practitioner → **C01** 3. Purchased/purchases medicine at the pharmacy/drug store 4. Took/takes herbal remedy/Traditional 5. Not treated		☐
B19	What is the main reason that causes [NAME] with the symptoms of TB not seek treatment to health practitioners: 1. Not severe illness 2. Difficult access to health facilities 3. Lack of time 4. No money 5. Can be self-treated/self-healing 6. Others please state.....		☐

C. KNOWLEDGE AND BEHAVIOR (ALL HOUSEHOLD MEMBERS AGED ≥ 15 YEARS)

HIV/AIDS

C01	Has [**NAME**] heard about HIV/AIDS	1. Yes	2. No → **C07**	☐

C02 Can HIV/AIDS be passed on through:

TO BE READ AND FILLED IN WITH ANSWER CODE OF 1=YES, 2=NO, OR 8=DON'T KNOW

a. Unsafe sexual contact	☐	f. Passing on from mother to baby during pregnancy	☐
b. Use of same syringe	☐	g. Buying fresh vegetables from farmers/sellers who are infected HIV/AIDS	☐
c. Blood transfusion	☐	h. Eating from the same plate with a person infected with the virus of HIV/AIDS	☐
d. Passing on from mother to baby during birth	☐	i. Through food prepared by ODHA (Sufferers of HIV/AIDS)	☐
e. Passing on from mother to baby during nursing	☐	j. Through mosquito bites	☐

C03 Can HIV/AIDS be prevented by :

TO BE READ AND FILLED IN WITH ANSWER CODES OF 1=YES, 2=NO , OR 8=DON'T KNOW

a. Having sexual intercourse with only one partner who is not at risk	☐	c. Not having sexual intercourse at all	☐	e. Not using the same syringe	☐
b. Having sexual intercourse with only husband/wife	☐	d. Using condom while having sexual intercourse with circumcision	☐	f. Conducting partner who is at risk	☐

C04 If a [**NAME**]'s family member suffers from HIV/AIDS, what will be done?

READ AND FILL OUT ANSWER CODE WITH 1=YES OR 2=NO OR 8=DON'T KNOW

	a. Keep it a secret	☐	c. Counseling and treatment	☐	e. Kept out	☐
	b. Talk to family member	☐	d. Seek alternative treatment	☐	f. Willing to take care of the house	☐
C05	Does [**NAME**] know about the voluntary HIV/AIDS test with counseling?		1. Yes 2. No → **C07**			☐
C06	Where does one obtain the voluntary HIV/AIDS test? **[ANSWER IS NOT READ], FILL OUT ANSWER CODE WITH 1=YES, 2=NO**					
	1. State Hospital	☐	4. Private Clinic	☐	7. Midwife/ Nurse	☐
	2. Private Hospital	☐	5. VCT Clinic	☐	8. Others, please state	☐
	3. Public Health Center/ Supporting Public Health Center	☐	6. Doctor's practice	☐		
PREVENTION OF LUNG TUBERCULOSIS (LUNG TB)						
C07	Where does [**NAME**] usually spit **[ANSWER IS NOT READ]** 1. Does not usually spit 2. Spits in the bathroom 3. Spits in a spitting container/can 4. Spits anywhere					☐
C08	Does [**NAME**] usually open the bedroom window everyday		1. Yes 2. No 3. Don't have it			☐
C09	Does [**NAME**] sundry mattress and or pillow and or bolster of kapok regularly once a week?		1. Yes 2. No 3. Does not have			☐
C10	Does [**NAME**] have a habit of eating and/or drinking from same plate/glass with others?		1. Yes 2. No			☐
PREVENTION OF MALARIA						

C11	What does [**NAME**] usually do so far to prevent malaria? **ANSWER IS NOT READ, Do probing. FILL THE ANSWER CODE WITH 1=YES, 2=NO**			
	a. Sleep with net	☐	e. house is sprayed with mosquito repellent/insecticide	☐
	b. Using coil/electric insect repellentq	☐	f. Taking preventive medicine when staying in malaria endemic area	☐
	c. Window/ ventilation using mosquito net	☐	g. Others…	☐
	d. Using repellent/ ingredients for prevention of mosquito bites	☐		
TOBACCO USE				
C12	Has [**NAME**] smoked/ chewed tobacco for the **last 1 month**? 1. Yes, everyday 3. No, but have done so previously **→C16** 2. Yes, sometimes **→C14** 4. Have never done it at all **→C18**			☐
C13	How old was [**NAME**] when starting to smoke/ chew tobacco "**everyday**" ?**FILL IN WITH "88" IF RESPONDENTS ANSWER DON'T REMEMBER**	.....years		☐☐
C14	On average, how many cigarettes/ cigars/ pipes (fruit)/ tobacco (quid) that [**NAME**] smoke per day?	.....pieces		☐☐
C15	Does [**NAME**] usually smoke in the house when being with other family members?	1.Yes **→C17** 2. No**→C17**		☐
C16	How old was [**NAME**] when he/she stopped/did not smoke/ chewed tobacco at all? **FILL IN WITH "88" IF RESPONDENT ANSWERS WITH DO NOT REMEMBER**	.....years		☐☐
C17	How old was [**NAME**] when "**first time**" smoking/chewing tobacco? **FILL IN WITH "88" IF RESPONDENT ANSWERS DON'T REMEMBER**	.....years		☐☐
CONSUME HERBAL REMEDY/ TRADITIONAL MEDICINE				

C18	Does [**NAME**] usually consume herbal remedy/ Traditional medicine? 1. Yes, everyday 3. No, but has consumed it before 2. Yes, sometimes 4. Never at all →**C23**	☐
C19	Does [**NAME**] consume self-made herbal remedy 1. Yes 2. No →**C21**	☐
C20	If the answer is Yes, does the self-made herbal remedy made by [**NAME**] use ingredients: **1=YES, 2=NO**	
	a. Javanese ginger curcuma zanthorriza) ☐ d. Meniran (phyllantus niruri)	☐
	b. Ginger ☐ e. Noni/Indianmulberry	☐
	c. Kencur (kaempferia galanga) ☐ f.	☐
C21	Form of herbal remedy supply which [**NAME**] usually consumes **1=YES, 2=NO**	☐
	a. Capsule/pill/tablet ☐ c. Boiled (sliced)	☐
	b. Steeped (powder) ☐ d. Liquid	
C22	Is consuming herbs/Traditional medicine beneficial for [**NAME**] 1.Yes 2. No	☐

C23	**IF HOUSEHOLD MEMBER FEMALE AGED 10 - 59 YEARS → Da. REPRODUCTIVE HEALTH** **IF HOUSEHOLD MEMBER FEMALE AGED >= 60 years →BLOCK IX. INDIVIDUALCONSUMPTION** **IF HOUSEHOLD MEMBER MALE 10 – 24 Years → D101** **IF HOUSEHOLD MEMBER MALE ≥ 25 Years → BLOCK IX. INDIVIDUAL CONSUMPTION**

D. REPRODUCTIVE HEALTH

Da. WOMEN'S REPRODUCTIVE PERIOD (ESPECIALLY FEMALE HOUSEHOLD MEMBERS OF 10-59 YEARS)

Da01	How old was [**NAME**] when first got the period (menstruation)	Age :.....(year) Not yet get period 77→ **D101** **Don't know/ Forget 88**	☐☐

Da02	Has [**NAME**] experienced irregular menstruation in the last 12 months?	1. Yes 2. No → **Db01a**	☐
Da03	Has [**NAME**] experienced getting period late in the last !2 months		☐
Da 04	Is [**NAME**] pregnant at the moment or has just given birth?	1. Yes→ **Db01a** 2. No	☐
Da05	According to [**NAME**], why is she suffering from irregular menstruation? **(ANSWER ALTERNATIVES ARE NOT TO BE READ)**	1. Approaching Menopause 2. Chronic pain 3. Hereditary 4. Others,**.....** 8. Don't know	☐
Da06	What does [**NAME**] do to treat the irregular menstruation? **(ANSWER ALTERNATIVES ARE NOT TO BE READ) 1=YES OR 2=NO**		
	a. Take medicine to ease period ☐ b. Take/drink herbs ☐ c. Doctor's medication ☐	d. Hormonal injection ☐ e. Others, please state…….. ☐	

Db. FERTILITY (ESPECIALLY FOR WOMEN WHO HAS BEEN MARRIED AGED 10-59 =YEARS)			
Db01	How old was [**NAME**] when first got married?	Age .....years Don't know ... 88	☐
Db02	Has [**NAME**] been given TT immunization?	1. Yes 2. No → **Db04** 8. Don't know → **Db04**	☐
Db03	a. How many times has [**NAME**] been given TT immunization before being married?	Number of injections....times	☐
	b. How many times has [**NAME**] been given TT immunization after being married?	Number of injections....times	☐
	IF NEVER WRITE "0", IF 7 TIMES IMMUNISATION OR MORE WRITE "7", IF DON'T KNOW WRITE "8"		

Db04	During your lifetime. a. Has [**NAME**] been pregnant?	1. Yes 2. No →**Dc01**	☐
	b. Has [**NAME**] been pregnant which ended at the period of pregnancy<22 w or < 5 …	1. Yes 2. No 8. Don't know	☐
	c. Has [**NAME**] been pregnant but ended at ≥22 weeks or >-5 months and the baby did not show signs of life?	1. Yes 2. No 8. Don't know	☐
	d. Has [**NAME**] given birth to live baby (including one who did not live long)?	1. Yes 2. No	☐
Db05	Does [**NAME**] have son or daughter who now lives with [**NAME**]?	1. Yes 2. No → **Db07**	☐

Db06	The number of children who live with [**NAME**]? a. The number of sons b. The number of daughters **None write "00"**	a. Sons at home ..... ☐☐ b. Daughters at home..... ☐☐
Db07	Does [**NAME**] have children that [**NAME]** delivered and now still alive but don't live together with [NAME]?	1. Yes 2. No → **Db09** ☐
Db08	The number of children who are still alive but don't live together with [**NAME**]? a. The number of sons	a. Sons in other places ..... ☐☐
	b.The number of daughters **none write "00"**	b. Daughters in other places ..... ☐☐
Db09	Has [**NAME**] ever give birth to sons or daughters who was born alive but now have passed away (including those who only lived for a short period of time)?	1. Yes 2. No → **Db11** ☐
Db10	a. How many sons have passed away	a. Sons who have passed away..... ☐☐
	b. How many daughters have passed away **If none write "00"**	b. Daughters who have passed away ☐☐
Db11	ADD UP Db06a, Db06b, Db08a, Db08b, Db10a, Db10b AND WRITE THE TOTAL NUMBER	**TOTAL NUMBER OF CHILDREN:.....** ☐☐

Dc. TYPE OF BIRTH CONTROL (SPECFICALLY FOR WOMEN WHO HAVE BEEN MARRIED AGED 10-59 YEARS)		
Dc01	Does **[NAME] clan partner**, use birth control/contraception to prevent pregnancy?	1. Use it now 2. Has used it/does not use it anymore → Dc06 3. Has never used it at all → Dc06 ☐
Dc02	What type of birth control/contraception is **[NAME] clan partner** using? Read point a to k . **FILL IN CODE 1=YES OR 2 = NO**	

	a. Female	☐	e. Injection	☐	i. Periodic abstinence/calender.	☐
	Sterilization	☐	i. Periodic	☐	j. Coitus	☐
	e.	☐	abstinence/calender q	☐	interruptus/withdrawal	☐
	Injectionq	☐	f. Condom	☐	q	
	i. Periodic		g. Diaphragm/intravaginal		k. Others (please	

Dc03	a. Is there cost spent to obtain birth control/contraception service used at present?	1. Yes 2. No → **Dc04** ☐
	b. Does [**NAME**] know the amount of rupiah paid	a. Yes b. No→ **Dc04** ☐
	c. If the answer is yes, write the amount in rupiah	Rp ☐.☐☐☐.☐☐☐

Dc04	Where did [**NAME**] get the birth control/contraception service or care?			
	1. State Hospital	5. Supporting Public Health Center	9. Midwife's Practice	☐☐
	2. Private Hospital	6. Clinic	10. Nurse's Practice	
	c.Maternity Hospital	7. Mobile Family Planning Team/Mobile Medical Team	11. Village Health Post/Village Maternity Center	
	4. Public Health Center	8. Doctor's Practice	12. Others, please state……..	

Dc05	How long has [**NAME**] used (birth control/contraception used at present) continuously?	(Months)	☐☐☐

CONTINUE TO Dc08. Dc06-Dc07 especially for respondents not using birth control/contraception.

Dc06	The main reason for not using birth control/ contraception ? **ANSWER ALTERNATIVES ARE NOT TO BE READ**	1. Not allowed by spouse/partner 2. Forbidden by religion 3. Costly 4. Difficult to obtain 5. Have no child yet	6. Planning to conceive 7. Afraid of side effects 8. Not willing 9. Does not find it necessary 10. Others	☐ ☐
If the answer Dc01=2, continue to P.Dc07 If the answer Dc01=3, continue to P.Dc08				
Dc07	How long has it been for not using birth control/contraception?		.....(month)	☐☐☐
Dc08	In the last 12 months, has [**NAME**] done examination of vital organ to health practitioners (Pap Smear/IVA Inspeculo Visual of vinegar acid)?		1. Yes 2. No 8. Don't know	☐

Dd. PREGNANCY, BIRTH AND EXAMINATIONS AFTER BIRTH (WOMEN HAVE BEEN MARRIED AGED 10-59 YEARS)				
Dd01	Have you been pregnant and given birth, during the period of 1 January 2005 until now?		1. Yes 2. No → **De01**	☐
Now I would like to ask about your experience during pregnancy and giving birth especially for the child born last.				
Dd02	a. Write **[CHILD'S NAME] and Household Member order of the last child** (If not on the House Member list, write the code 00)	Household Member name	Household Member order: ☐☐	
	b. How old was she when she gave birth to **last [CHILD'S NAME]**	..... years		☐☐
Dd03	Order of birth **[last CHILD'S NAME]** from all born alive	The ……..child in the family		☐☐
Dd04	Length of time between birth of the **last child [CHILD'S NAME]** and the previous child **["000" if first child)**	.....months		☐☐

Dd05	Status of last child	1. Alive→ **Dd10** 2. Passed away	☐
QUESTIONS Dd06-Dd09f ESPECIALLY FOR THE LAST WHO DIED			
Dd06	If already passed away, age when died: Circle code 1, if died at < 1 month, fill in in days Circle code 2, if died at age 1-23 months, fill in in months Circle code 3, if died >= 2 years (over 24 months), fill in in years	1. DAYS 2. MONTHS 3. YEARS	☐☐ ☐☐ ☐☐
Dd07	Was [**CHILD'S NAME**] weighed when born?	1. Yes 2. No →**Dd09a** 8.Don't know→ **Dd09a**	☐
Dd08	What was the weight of [**CHILD'S NAME]** when born? Note the weight from KMS/KIA Book, If Any **IF THE ANSWER IS DON'T KNOW FILL IN CODE 8888**	1. Gram based on respondent's memory	☐☐☐
		2. Gram from KMS/KIA Book	☐☐☐

Dd09	a. **Who helped her when giving birth to [CHILD'S NAME]?** 1. Obstetrician 2. Physician 3. Midwife 4. Nurse/paramedic 5. Medicine man 6. Family/friend 7. Others, please write	a. First Aid	☐
		b. Last Aid	☐
	b. **Where was [NAME] born** 1. State Hospital 2. Private Hospital 3. Maternity Hospital/Maternity Center 4. Public Health Center 05. Supporting Public Health Center 06. Doctor's Practice 07.Midwife Practice 08. Village Maternity Center/Village Health Post 09. At home 10.Others, please state		☐☐

	c. **After [CHILD'S NAME] was born, was health check done?**	1. Yes 2. No →**Dd10** 8. Don't know → **Dd10**	☐
	d. **Did [NAME] receive health service (was visited/visited) at: (READ OUT POINTS a TO d) FILL IN WITH CODES 1=YES 2=NO 7=DOES NOT APPLY 8 = DON'T KNOW**		
	a. 6–48 hours after being born ☐	b. 3–7 days after being born ☐	c. 8–28 days after being born ☐	d. >28 days after being born ☐
	e. Who had [CHILD'S NAME] checked at the time? **HEALTH ATTENDANT:** 1. Pediatrician 4. Midwife 2. Physician 5. Village Midwife 3. Nurse **OTHER PEOPLE:** 6. Nurse-midwife 7. Others,…….(please state)		☐☐
	f. Where was the check done? 1. State Hospital 2. Private Hospital 3. Maternity Hospital 4. Public Health Center/ Supporting Public Health Center 5. Integrated Service Post 6. Clinic/ Doctor's Practice 7. Clinic / Midwife's Practice 8. Nurse's Practice 9. Village Maternity Center/Village Health Post 10. At home 11. Others, please state.....		☐
Dd10	When she was being pregnant with **[CHILD'S NAME]**, did she intend to conceive at the time, intended later, or did not intend to have (another) child at all?	1.Yes, intended later 2. Yes, intended→ **Dd12** 3.Did not intend to have any more children →**Dd12**	☐
Dd11	How long was it that she wanted before having **[CHILD'S NAME]?** **IF THE ANSWER IS DON'T KNOW FILL IN THE CODE 888**		☐☐☐

Dd12	During pregnancy with [**CHILD'S NAME]** where did she have her pregnancy checked?	1.Health Practitioner 2. Health practitioner and traditional healer /nurse-midwife 3. Traditional healer/nurse-midwife →**Dd27**	☐
Dd13	Who checked her pregnancy? (Ask the people who checked the pregnancy. Answer may be more than 1). **FILL IN ANSWER CODE WITH 1=YES OR 2=NO** a. Obstetrician/Gynecologist ☐ c. Midwife ☐ e. Others ☐ b. Physician ☐ d. Nurse/Mantri (paramedic) ☐		
Dd14	Were you given *Kartu Menuju Sehat Ibu Hamil* (KMS BUMIL)/Health Card for Pregnancy or KIA Book. If the answer is Yes, can she show the KMS BUMIL/KIA Book?	1. Yes, shown 2. Yes, not shown 3. No	☐

Dd15	Where did she have her pregnancy checked? **(READ POINTS a TO k) FILL IN ANSWER CODE WITH 1=YES OR 2=NO** a. State Hospital ☐ b. Private Hospital ☐ c. Maternity Hospital ☐ d. Public Health Center ☐ e. Supporting Public Health Center ☐ f. Clinic / Doctor's Practice ☐ g. Clinic / Midwife Practice ☐ h. Nurse Practice ☐ i. Village Maternity Center / Village Health Post ☐ j. integrated Service Post ☐ k. Others please state……., ☐		
Dd16	While being pregnant with **[CHILD'S NAME]**, how many times did she have checks? **IF THE ANSWER IS DON'T KNOW FILL IN THE CODE [11]88"**	------ Times	☐☐

Dd17	How many months being pregnant with **[CHILD'S NAME]** when first had the pregnancy checked by health practitioner? **IF THE ANSWER IS DON'T KNOW FILL IN WITH CODE 1188"**	----- Months	☐☐
Dd18	How many times did she have her pregnancy checked : a. In the first 3 months b. Between 4-6 months: c. Between 7 months until giving birth	Number of checks: .....times .....times .....times	☐☐ ☐☐ ☐☐
Dd19	How many months being pregnant with **[CHILD'S NAME]** When she last had her pregnancy checked? **IF THE ANSWER IS DON'T KNOW FILL IN CODE 88**	.....Months	☐☐
Dd20	While being pregnant with (**CHILD'S NAME**) did she:? **FILL IN ANSWER CODE WITH 1=YES OR 2=NO** a. Have her weight checked ☐ b. Have her height checked ☐ c. Have her blood pressure checked ☐ d. have her urine checked ☐ e. have her blood checked ☐ f. have her abdomen/stomach checked (stroked)		
Dd21	During checks, was she told about the signs of danger (complications) in pregnancy?	1. Yes 2. No→**Dd23** 8. Don't know →**Dd23**	☐
Dd22	During checks, was she told where to go to get help in times of dangers (complications)?	1. Yes 2. No 8. Don't know	☐
Dd23	While being pregnant with (**CHILD'S NAME)** did she ever get injection on the upper arm to prevent babies from tetanus or seizure after birth?	1. Yes 2. No →**Dd25** 8. Don't know →**Dd25**	☐

Dd24	While being pregnant with (**CHILD'S NAME**) how many times did she receive the injection? (IF THE ANSWER IS DON'T KNOW FILL IN "88")	.....times	☐☐
Dd25	While being pregnant with (**CHILD'S NAME**), did she receive or buy zinc/iron pill?	1. Yes 2. No →**Dd27** 8. Don't know→**Dd27**	☐
Dd26	While being pregnant with (CHILD'S NAME) how many days did she take iron/zinc pills?	.....days	☐☐
Dd27	While being pregnant with (NAME), did she talk to anyone about: **(FILL IN ANSWER CODE WITH 1=YES OR 2=NO)** a. Where did she give birth? ☐ b. Transportation to place of giving birth? ☐ c. Who will help when giving birth? ☐ d. cost of giving birth? ☐ e blood donation if necessary? ☐		
Dd28	Did she experience signs of dangers (complications) during pregnancy?	1. Yes 2. No→**Dd31** 8. Don't know → **Dd31**	☐
Dd29	What are the signs of danger (complications) of the pregnancy? **ANSWERS SHOULD NOT BE READ, FILL IN ANSWER CODE WITH 1=YES OR 2=NO** a. Strong pain before 9 months ☐ b. Bleeding ☐ c. High Fever ☐ d. Seizure and fainting ☐ e. Others, please state ☐		

Dd30	What was done to overcome the problem? **ANSWERS SHOULD NOT BE READ, FILL IN ANSWER CODE WITH 1=YES, 2=NO** a. Did nothing ☐ d. Take/drink herbal medicine. ☐ g. Went to tthe doctor ☐ b. Took a rest ☐ e. Went to Traditional healer/nurse-midwife ☐ h. Went to the Health Service Unit ☐ c. Took medicine ☐ f. Went to the midwife ☐ i. Others ☐		
	Was **(CHILD'S NAME)** born through cesarean section)?	1. Yes 2.No	☐
Dd32	How far into the pregnancy with (**CHILD'S NAME**) was it when he/she was born ?	.....months	☐
Dd33	When (**CHILD'S NAME**) was born, was he/she: very big , bigger than average, average, smaller than average, or very small?	1. Very big 2. Bigger than average 3. Average, 4. Smaller than average, 5. Very small	☐
Dd34	When about to give birth to (**CHILD'S NAME**), did she suffer from: **FILL IN ANSWER CODE WITH 1=YES OR 2=NO or 8=DON'T KNOW**		
	a. Strong and regular stomach pain more than a day and night? ☐	d. Seizure and/or fainting ?	☐
	b. Heavier bleeding than usual (more than 2 cloths)? ☐	e. Discharge of amniotic fluid more than 6 before the child was born?	☐
	c. High body temperature and or discharge of smelly mucus/slime? ☐	f. Is there any other difficulties complications? If any, please state…….	☐
Dd35	When giving birth to (**CHILD'S NAME**), was she diagnosed with: **FILL IN ANSWER CODE WITH 1=YES, 2=NO OR 8=Don't know**		

	a. Bleeding ☐ b. Preeclampsy/Eclampsy (Swelling of two legs & high blood Pressure/seizure) ☐ c. Rupture uteri/rupture of uterus ☐ d. Placenta praevia ☐	e. Early ☐ f. Ectopic Pregnancy ☐ g. Others break of amniotic fluid ☐

IF Dd35 POINT a to g ONE OF THEM IS ANSWERED BY "YES" THEN CONTINUE TO Dd36
IF Dd35 POINT a to g ALL ANSWER IS "NO" OR "DON'T KNOW" THEN CONTINUE TO Dd37

Dd36	Who diagnosed her to have suffered from the complication (as shown in Dd35)? 1. Obstetricians 3. Midwife 5. Traditional healer/nurse midwife 7. Others, please state: 2. Physician 4. Nurse/*Mantri* 6. Family/friend		☐
Dd37	After (**CHILD'S NAME**) was born, did she have her health checked?	1. Yes 2. No → **Dd41**	☐
Dd38	After giving birth, on what day was her health checked for **the first time**? **(IF THE ANSWER IS DON'T KNOW FILL IN "888")**	Day.....	☐☐☐
Dd39	Who checked her health after giving birth ? **FILL IN ANSWER CODE WITH 1=YES OR 2=NO (ONLY ONE CHOICE)** a. Obstetrician ☐ c. Midwife ☐ e. Traditional healer/nurse-midwife ☐ b. Physician ☐ d. Nurse ☐ f. Others, please state ☐		

Dd40	Where was the examination conducted? 1. State Hospital 05. Integrated Service Post 09. Village Maternity Center/Village Health Post 2. Private Hospital 06. Clinic/ Doctor's Practice 10. At home 3. Maternity Hospital 07. Clinic / Midwife Practice 11. Others, please state..... 4. Public Health Center/Supporting Public Health Center 8. . Nurse Practice	☐☐
Dd41	After giving birth, did she experience? **FILL IN ANSWER CODE WITH 1=YES OR 2=NO 8=DON'T KNOW** a. Bleeding (more than 2 cloths) ☐ c. Seizure ☐ e. Pain on the breast ☐ b. Fainting ☐ d. High Fever ☐ f. Feeling of sadness and depress ☐ g. Others, please state …….. ☐	

IF in Dd41 POINTS a to g ONE OF THE ANSWERS IS "YES" THEN CONTINUE TO Dd42
IF in Dd41 POINTS a to g ALL ANSWERS WERE "NO" OR "DON'T KNOW" THEN CONTINUE TO Dd43

Dd42	When experiencing the above mentioned, what was done: **FILL IN ANSWER CODE WITH 1= YES OR 2=NO**					
	a. Did not do anything	☐	d. Took/drank herbal remedy	☐	g. Visited doctor's practice	☐
	b. Took a rest	☐	e. Saw Traditional healer/nurse-midwife	☐	h. Went to Community Health Center/ Supporting Health Center	☐
	c. Took medicine	☐	f. Went to midwife Practice	☐	i. Went to Village Maternity	☐
					j. Center/Village Health Post	☐
					k. Others, please state	☐
Dd43	**During childbed period, did [NAME] receive vitamin A capsule pink in color. SHOW PROP CARD**		1. Yes 2. No 8. Don't know			☐

De. MISCARRIAGE and UNWANTED PREGNANCY(especially for women who have been married aged 10-59 years)
(PERTANYAAN LANGSUNG DITANYAKAN KEPADA RESPONDEN/ UPAYAKAN TANPA PENDAMPING)

Now I would like to give questions regarding pregnancy during the last five years (since 1 January 2005)

De01	In the last five years, Was there pregnancy which ended at the period of pregnancy < 22 weeks (< 5 months)?	**1.** Yes, has experienced **2.** Never→ **De05**	☐
De02	Was there an intention to terminate the pregnancy?	1. Yes 2. No → **De05**	☐
De03	If the answer is Yes, what was done to terminate the pregnancy? (answers can be more than one). Fill in answer code with 1= Yes or 2 = No		

	a. Herbs ☐ c. Massage ☐ e. Suction ☐ g. Others, please state ..... ☐ b. Pill ☐ d. Injection ☐ f. Curette ☐			
De04	Who helped during the miscarriage?	1.Doctor 2.Midwife 3.Traditional healer/nurse-midwife	4.By herself 5. Others, please state…	☐
De05	In the last five years, was there any unwanted pregnancy?	1. Yes	2. No → **De1 1**	☐
De06	Was there intention to terminate the pregnancy?	1. Yes	2. No → **De1 1**	☐
De07	If the answer is Yes, what was done to terminate the pregnancy? (answer may be more than one) with answer code 1= Yes or 2 = No a. Herbal remedy ☐ c. Massage ☐ e. Suction ☐ g. Others, ☐ b. Pills ☐ d. Injection ☐ f. Curette ☐ Please state.....			
De08	Did anyone help?	1. Doctor 2. Midwife 3. Traditional healer/nurse-midwife	4. Herself 5. Others, please state	☐
De09	Was the intention to terminate the pregnancy successful?	1. Yes	2. No → **De11**	☐
De10	What was the reason for terminating the pregnancy	1. Health Problems 2. Too many children 3. Too close/frequent 4. Age	5. Economic reasons 6. Busy from work 7. 7. Others (please state…….)	☐

De11	IF THE RESPONDENT IS MALE OR FEMALE AGED 10-24 YEARS → TO P.Df01 IF THE RESPONDENT IS MALE OR FEMALE AGED 25 YEARS AND OVER → BLOCK IX. CONSUMPTION		
Df. SEXUAL BEHAVIOR (Especially for Household Member Aged10-24 years)			
THIS PART MUST BE ANSWERED BY THE RESPONDENT HIM/HERSELF (MUST NOT BE ACCOMPANIED)			
Now I would like to give six questions (Df01 – Df06) on sex. Please apologize if it is too personal			
Df01	Has [**NAME**] had sexual intercourse?	1. Yes 2. No →**Df06**	☐
Df02	With whom did [**NAME**] do sexual intercourse for the first time **DO NOT READ THE ANSWER ALTERNATIVES**	1. Husband/ wife 2. Friend 3. Boy/girlfriend 4. Family 5. Sex Worker/prostitute 6. Others, please state...	☐
Df03	How old was [**NAME**] when having the sexual intercourse	Age in years ..... years Don't know 88 →**Df06**	☐
Df04	When having the first sexual intercourse, did [**NAME**] or partner used contraception/birth control to prevent pregnancy?	1. Yes **2.** No →**Df06** 8. Don't know/ don't remember →**Df06**	☐
Df05	The use of which contraception /birth control that [**NAME**] or partner choose when having first intercourse? **DO NOT READ ANSWER ALTERNATIVES**	1. Condom 2. Pill 3. Diaphragm/intravag 4. Coitus interruptus/withdrawal 5. Others, please state	☐
Df06	Has [**NAME**] had information on reproductive health?	1. Yes 2. No	☐

CONTINUE TO BLOCK IX. CONSUMPTION

E. CHILD HEALTH			
Ea. Health record of babies and children under-five years of age (Esp. household member aged 0-59 mo)			
Ea01	Write name and order of biological mother [NAME] **IF BIOLOGICAL MOTHER DOES NOT LIVE IN SAMPLE HOUSEHOLD (NOT HOUSEHOLD MEMBER) FILL IN "00"**	Biological mother's name	Mother's order in household member: ☐☐
Ea02	a. If biological mother is not a household member , is the biological mother [NAME]	1. Still alive→**Ea03** 8. Don't know→**Ea03** 2. Has passed away	☐
	b. If biological mother [NAME] has passed away, did she die	1. During pregnancy 4. Accident 2. While giving birth 5. Others 3. Less than 2 months after giving birth	☐
Ea03	**a. Who helped in the process of giving birth (NAME)? [Fill in answer code directly to the box]** 1. Doctor 3. Other paramedics 5. Relatives/ Family 2. Midwife 4. Traditional birth attendant 6. Others, please state	a. First aid	☐
		b. Last aid	☐
	b. Where was [NAME] born : 1. State Hospital 05. Supporting Public Health Center 09. At home 2. Private Hospital 06. Doctor's Practice 10. Others, ... 3. Maternity Hospital/ Maternity Center 07. Midwife Practice 4. Public Health Center 08 Village Maternity Center/Village Health Post		☐☐
Ea04	When [NAME] was born, was he/she weighed (weight of baby within 48 hours)	1. Yes 2. No →**Ea07** 8. Don't know → **Ea07**	☐
Ea05	If the answer is "Yes", what was the weight of [NAME] when born (Write in unit of gram)	.....gram	☐☐☐
Ea06	What is the source of [NAME]'s weight information when born 1. KMS/KIA Book/Health Note Book/birth notes 2. Mother/other household member's admitting or memory		☐

Ea07	What kind of medicine/remedy was used to treat [NAME]'s umbilical cord right after being born 1. Not given anything 3. Sprinkled medicine (powder form) 8. Don't know 2. Betadine/ alcohol 4. Concoction / Traditional remedy	☐

Ea08	Did **[NAME]** get health service (was visited/visited) in: **(BREAD OUT POINTS a TO d) FILL IN WITH THE CODE 1 = YES 2 = NO 7 = DOES NOT APPLY 8 = DON'T KNOW**			
	a. 6–48 hours after being born ☐	b. 3–7 days after being born ☐	c. 8–28 days after being born ☐	d. >28 days after being born ☐

IF ANSWER CODE Ea08 (a TO d) ALL OF THEM 2 OR 7 OR 8 →Ea11

Ea09	Where did **[NAME]** receive health service at the time? 1. State Hospital 6. Private Polyclinic 2. Private Hospital 7. Health Worker Practice 3. Maternity Hospital 8. At home 4. Public Health Center/ Supporting Public Health Center/ Community Public Health Center 9. Does not 5. Village Health Post/Integrated Service Center apply	a. 6 – 48 hours after being born	☐
		c. 3 – 7 days after being born	☐
		c. 8 – 28 days after being born	☐
		d. > 28 days after being born	☐

Ea10	Type of health service received when **[NAME]** was **6 – 48 hours** after being born: **FILL IN WITH CODE 1 = YES OR 2 = NO OR 8 = DON'T KNOW** **(IF AT 6 - 48 HOURS OLD [NAME] WASNOT CHECKED, FILL IN ALL WITH CODE"2")** a. Given Hepatitis B (HB-0)Immunization ☐ c. Vitamin K injection ☐ b. Given ointment for eyes/eye drop ☐ d. Others, please state ..... ☐	

Ea11	Since **[NAME]** was born until he/she was 28 days old, has **[NAME]** been suffering from illness?	1. Yes 2. No →**Ea13** 8. Don't know → **Ea13**	☐

Ea12	When ill, did **[NAME]** see any health practitioners?	1. Yes 2. No 8. Don't know	☐
Ea13	Does **[NAME]** have health notes in the form of KS 1. Yes, able to show 2. Yes, is not able to show(kept by cadre/ nurse/ in Integrated Service Post/Integrated Service Post)	3. Used to have one, but has lost it 4. has never owned one	☐
Ea14	Does **[NAME]** have health note in the form of KIA Book 1. Yes, able to show 2. Yes, is not able to show(kept by cadre/ nurse/ in Integrated Service Post/Integrated Service Post)	3. Used to have one, but has lost it 4. has never owned one	☐
Ea15	Has **[NAME]** owned other health notes such as *Child Health Note Book (Beside KMS and KIA Book)* 1. Yes, able to show 2. Yes, was not able to show (kept in another place)	3. Used to have one, but has lost it 4. has never owned one	☐

IF ANSWER CODE Ea13 S/D Ea15 ALL ARE CODED 2 OR 3 OR 4 →Ea18

Ea16	Was there immunization notes in [NAME]'s KMS/ KIA Book/ Child Health Note Book	1. Yes **2.** No →**Ea18**	☐

Ea17

Copy from **KMS/KIA BOOK/CHILD HEALTH NOTE**, date../ month..../year for each type of immunization.
FILL IN 1177" IN 'DATE/MONTH/YEAR' COLUMN, IF CHILD'S AGE IS NOT THE AGE TO BE GIVEN IMMUNISATION YET
FILL IN 1188" IN 'DATE/MONTH/YEAR', IF THE CARD SHOWS THAT IMMUNISATION WAS GIVEN, BUT THE DATE/MONTH/YEAR WAS NOT STATED.
FILL IN 1199" IN THE COLUMN FOR 'DATE/MONTH/YEAR', IF IMMUNISATION WAS NOT GIVEN

a. Hepatiitis B 0	☐☐/☐☐/☐☐	f. Polio 1	☐☐/☐☐/☐☐
b. BCG	☐☐/☐☐/☐☐	g. Polio 2	☐☐/☐☐/☐☐
c. DPT –HB Combo1	☐☐/☐☐/☐☐	h. Polio 3	☐☐/☐☐/☐☐

	d. DPT-HB Combo 2	☐☐/☐☐/☐☐	i. Polio 4	☐☐/☐☐/☐☐
	e. DPT-HB Combo 3	☐☐/☐☐/☐☐	j. Measles	☐☐/☐☐/☐☐

IF THE IMMUNISATION NOTE OF ART/HOUSEHOLD MEMBER IS COMPLETE, CONTINUE TO Ea19 IFIMMUNISATION OF ART/HOUSEHOLD MEMBER IS INCOMPLETE, CONTINUE TO Ea18			
Ea18	Has **[NAME]** ever got the following immunization : **(INFORMATION CAN BE OBTAINED FROM VARIOUS SOURCES)**		
	a. Hepatitis B-0 immunization, usually given right after the baby is born until the baby is 7 days old, injected on the thigh?	1. Yes 2. No →**Ea18e** 8. Don't know →**Ea18c**	☐
	b. At how many days old was **[NAME]** given Hepatitis B 0 immunization? **IF THE ANSWER IS DON'T KNOW FILL IN "88" FOR DAYS (usually HB-0 is given at 0-7 days)**	..... days	☐
	c. BCG immunization which usually starts to be given at 1 day old and injected on the upper arm or thigh also leaves a (scar) under the skin?	1. Yes 2. No →**Ea18e** 8. Don't know →**Ea18e**	☐
	d. At what age was **[NAME]** given BCG immunization? **(FILL IN DAY OR MONTH) IF THE ANSWER IS DON'T KNOW FILL IN THE CODE "88" FOR DAYS AND MONTHS**	..... days	☐
		..... months	☐
	e. Polio immunization, pink or white fluid which usually starts to be given at 2 months old and dripped into the mouth?	1. Yes 2. No →**Ea18h** 7. Not time yet (not 2 months old yet) →**Ea18h**	☐
	f. At what age was **[NAME]** first given polio immunization? **IF DON'T KNOW FILL IN "88" UNTUK BULAN**	..... months	☐☐
	g. How many times was **[NAME]** given polio immunization?	..... times	☐

	h. DPT-HB combo (Diphteria Pertusis Tetanus-Hepatitis B immunization (combo) usually injected on the thigh and usually starts to be given when the child is 2 months old given at the same time as polio?	1. Yes 2. No →**Ea18k** 7. Not time yet (not yet 2 months old) →**Ea18k** 8. Don't know →**Ea18k**	☐
	i. At what age did (NAME) first given DPT-HB Combo immunization. **"IF DON'T KNOW FILL IN CODE "88"**	..... months	☐☐
	j. How many times has **[NAME]** been given DPT-HB Combo immunization?	..... times	☐
	k. Measles immunization which usually starts to be given at 9 months old and injected on the thigh also given one time?	1. Yes 2. No 7. Not time yet (not 9 months old yet) 8. Don't know	☐
Ea19	In the last 6 months, how many times has [**NAME]** been weighed? IF **JIKA TIDAK PERNAH WEIGHED, FILL IN CODE " OR IF "DON'T KNOW", FILL IN CODE "88" →Ea21**	..... times	☐☐

Ea20	Where does [**NAME]** most often weighed? 1. Hospital 2. Public Health Center/Supporting 3. Village Maternity House ……. 4. Posyandu (Integrated Service Post) 5. Poskesdes (Village Health Post) 6. Others, please state		☐
Ea21	Has in the last 6 months **[NAME]** been getting capsule vitamin A? (**USE PROP CARDS)**	1. Yes 7. Not yet time (not 6 months yet) 2. No 8. Don't know	☐

IF HOUSEHOLD MEMBER AGED 24 – 59 MONTHS →Ea22
IF HOUSEHOLD MEMBER AGED 0 – 23 MONTHS →Eb01

Ea22 ESPECIALLY FOR HOUSEHOLD MEMNER AGED 24 – 59 MONTHS

Ea22	Does [NAME] have anomaly/handicap : **FILL IN WITH CODE 1=YES OR 2=NO**			
	a. Blind (sight) → **OBSERVATION**	☐	e.Disabled (body) → **OBSERVATION**	☐
	b. Hearing impairment (hearing) → **OBSERVATION**	☐	*f. Down Syndrome* → **USE PROP CARDS**	☐
	c. Speech impairment (speech) → **OBSERVATION**	☐	*g. Cerebral Palsy*→ **USE PROP CARDS**	☐
	d. Mentally disabled (mental) → **OBSERVATION**	☐	*h.* Others, please state.....	☐

CONTINUE TO BLOCK IX. CONSUMPTION

Eb. BREASTMILK AND BABY FOOD (ESPECIALLY FOR HOUSEHOLD MEMBER AGED 0 – 23 MONTHS)

Eb01	Has **[NAME]** been breast-fed (given breast milk)?	1. Yes 2. No → **Eb09**	☐
Eb02	When did **[NAME]** started to be breast-fed by the mother for the first time, after being born? **IF LESS THAN 1 HOUR, WRITE 00;** **IF LESS THAN 24 HOURS, WRITE IN HOUR;** **IF 24 HOURS OR MORE WRITE IN DAY**		

	a. .....hours	☐☐	b. ..... days	☐☐
Eb03	What did [NAME'S mother] do to the colostrum (the very first breast milk, usually watery, clear and or yellowish in color)? 1. Given all to the baby 3. Discarded all, then breast milk was given to the baby 2. Discarded a little then breast milk was given to the baby 8. Don't know			☐
Eb04	Was before given breast milk for the first time or before breast milk was available, [NAME] given drinks (liquid) or food besides		1. Yes 2. No →**Eb06** 8. Don't Know →**Eb06**	☐
Eb05	What drinks/food were given to [**NAME] before breast milk was available**? **TO BE READ AND FILL IN WITH CODE 1= YES OR 2=NO** a. Formula milk ☐ e. Rice broth ☐ i. Honey/ Honey + water ☐ b. Non formula milk ☐ f.Coconut Water ☐ j. Mashed banana ☐ c. Plain water ☐ g. Squeezed fruit/ fruit juice ☐ k. Mashed rice ☐ d. Sugar water ☐ h. Sweet tea ☐ l. Others, please state ☐			
Eb06	Is **[NAMA]** still breast-fed at present?		1. Yes →**Eb08** 2. No	☐
Eb07	At how many months old was **[NAME]** weaned/started not to be given breast milk anymore? **If the answer is**		..... month →**Eb09**	☐☐
Eb08	Is in the last 24 hours **[NAME] only get breast milk** *(not given fluid/food besides breast milk)*		1. Yes 2. No	☐

Eb09	Since when *(at how many days/months old)* did **[NAME]** started to be given drinks (fluid) or food besides breast milk: 1. 0 – 7 days 4. 2 – < 3 months 7. ≥ 6 months 2. 8 – 28 days 5. 3 – < 4 months 8. Don't know 3. 29 days – < 2 months 6. 4 – < 6 months 9. Not given food besides breast milk yet (breast milk) →**BLOCK IX. CONSUMPTION**	☐

Eb10	What kind of drinks (fluid) or food besides breast milk were started to be given to **[NAME]** at that age *(According to answer Eb09)* 1. Formula Milk 5. Squeezed fruit/ fruit juice 2. Non-formula Milk 6. Flour porridge/ sifted porridge 3. Rice broth 7. Rice Porridge/ steamed rice/ mashed rice 4. Mashed banana 8. Others ...	☐

BLOCK IX. INDIVIDUAL FOOD CONSUMPTION - 24 HOURS AGO (All Ages)

1. Days of interview : ☐ 1. Monday – Friday; 2. Saturday _Sunday	2.Condition during interview : ☐ 1. The usual; 4. Fasting; 2. Holding event; 5. Ill; 3. Religious Holidays/events; 6. Diet.

Time	Menu	Food Ingredient	Ingredient Code	Household Size	Weight (gram)
Morning					
Variety					
Noon					

Variety					
Night					

3. Does it still get breast milk : 1. Yes; 2. No ☐; 4. If the answer is Yes, Frequency of getting breast milk : ☐☐ times day and night (24 hours ago)

X. BODY HEIGHT/ LENGTH AND WEIGHT MEASUREMENTS

ALL AGES

1 a. Was household member weighed? 1. Yes 2. No →**X2a** ☐	1 b. Body Weight (kg) ☐☐☐
2a. Was household member measured? 1. Yes 2. No →**XI** ☐	2 b. Body Height/ Body Length (cm) ☐☐☐
	2c. **ESPECIALLY FOR TODDLERS**, Position of Measuring BH/BL ☐ **1. Standing** **2. Laying on Back**

XI. LABORATORY EXAMINATION

Sticker Number	***STICK THE NUMBER STICKER (7 DIGITS) HERE***

RDT EXAMINATION (ALL AGES)

1 Examination of RDT?	1. Yes 2. No →**XI.6**	☐

IF THE ANSWER IS YES, ANSWERS 2a – 5 QUOTED FROM FORM M1

1. a. Date of finger blood sampling ☐☐-☐☐-☐☐☐☐	**b.** Name of finger blood taker.....

3. Is /Has [NAME] :

a. Suffering from fever in the last 2 days?	1. Yes 2. No	☐
b. Taking medicine of ACT program in this 1 month?	1. Yes 2. No	☐
c. Suffered from malaria before in the last 1 month?	1. Yes 2. No	☐
d. Received blood transfusion in the last 1 month?	1. Yes 2. No	☐
e. Stayed over out of town in the last 1 month? Please state	1. Yes 2. No	☐

4. a. Time of buffer drops: Hour ☐☐ Minute ☐☐	b. Time of reading of RDT Hour ☐☐ Minute ☐☐

5.. Result of blood dipstick examination (*Rapid Diagnostic Test*)	1. Negative 2. *Plasmodium falcifarum (Pf)* 3. *Plasmodium vivax (Pv)* 4. Pf and Pv (Mix) *5.*Result is not valid	☐

THICK BLOOD SMEAR SUPPLY (ALL AGES)

6. Was Thick Blood Smear Supply taken?		1. Yes 2. No	☐
SPUTUM (ESPECIALLY HOUSEHOLD MEMBERS AGED ≥ 15 YEARS)			
7. Sputum Taking	a. At same time	1. Yes 2. No	☐
	b. Morning	1. Yes 2. No	☐

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