

# Children Growth Awareness: An Important Role for Reaching the Optimal First 1000 Days in Life

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## ABSTRACT

**Background and Aims:** Monitoring child growth, including measurement of weight, height or length, and head circumference, plays an important role in detecting a child's growth abnormalities and monitoring a child's nutritional adequacy. This study aimed to measure the completeness of growth chart in maternal and child health handbook (MCHH) and identify cadres' practices on child growth monitoring. **Methods:** This is a cross-sectional survey conducted in three stunting villages in Lombok Tengah, Indonesia, between June and July 2019. We evaluated 59 cadres and nutritionists using questionnaire and reviewed 205 MCHHs. **Results:** We found 100% (205 out of 205) of the World Health Organization (WHO) growth charts, including weight for height/length, height/length for age, and head circumference for age graphs in MCHH were not filled. Out of 59 participants, 23.7% (14 people) never participated in height/length measurement, and only 13.6% (8 people) did a head circumference measurement at least once. 94.9% (56 people) never filled or plotted WHO curves in the MCHH with the most reasons are did not know how to fill (64.4%), and 28.8% did not know that the growth chart can be filled and plotted. **Implication:** Routine child growth monitoring should be done especially for children under two years of age. As child growth and development screening and monitoring are important and could affect children in reaching their potentials, we suggest that government should socialize more about the importance and the urgency about child growth and development awareness to all parents and healthcare practitioners.

**Keywords:** Child health, growth assessment, MCHH, awareness, 1000 days

## 1. INTRODUCTION

Formal verification can reveal the unexposed defects in a safety-critical system[1]. Child growth disorders, including chronic malnutrition, or stunting (defined as being too short for a given age), remain a serious problems in Indonesia, causing long-term damage to individuals health status, and economies as a whole. According to the Indonesian Basic Health Survey in 2018, the malnutrition rate in children under five years old is 17.7%, and stunting rate in children under five years old is 30.8%. These numbers are higher than the global rate (Kementerian Kesehatan dan Lembaga Penelitian dan Pengembangan Kesehatan Nasional, 2018; WHO, 2019).

Growth is a sensitive marker of children's health. Normal growth can only happen if a child is healthy, adequately nourished and emotionally secured (Basset & Ruel-Bergeron, 2012). Child growth monitoring program intends to make sure the appropriate identification of children with growth problems, at the earliest possible, so that early

identification, prompt investigation and early treatment could be provided appropriately (Basset & Ruel-Bergeron, 2012). Moreover, treatment for children with growth disorders is known to be better if given early (Basset & Ruel-Bergeron, 2012; Piwoz, Sundberg, & Rooke, 2012). Although monitoring child growth is not the best option in developing countries with weak economies and minimum health budgets, growth monitoring can provide an entry point to preventive and curative child health care and was associated with significant reductions in child malnutrition and mortality (Ashworth, Shrimpton, & Jamil, 2008). According to Ashworth et al., (2007), there are 2 potential strengths of child growth monitoring, which are providing frequent contact with health workers and channelling to child health interventions (Ashworth et al., 2008). If monitoring child growth and health promotion have already existed, these programs could be improved by strengthening the nutrition counselling elements, and combining monitoring child growth with other health programs such as immunization (Ashworth et al., 2008). To make monitoring child growth a success, political commitment, investment,

and strengthening of health systems are necessary to be in place (Ashworth et al., 2008). Training, supervision and support for health workers and cadres will also require to be improved if health workers are equipped with necessary knowledge and communication skills (Ashworth et al., 2008).

Monitoring child growth, including measurement of weight, height or length, and head circumference, plays a vital role in detecting a child's growth abnormalities and monitoring a child's nutritional adequacy. In Indonesia, MCHHis a guide book that owned by a mother and child, which contains information and record of maternal and child health. Cadres must record measurement of weight, height or length, and head circumference in this book. This study aimed to measure the completeness of growth chart in maternal and child health book and identify cadres' practices on child growth monitoring.

## 2. METHODS

We developed a cross-sectional, community-based survey of growth-monitoring practices. The survey held in three stunting villages in Lombok Tengah, chosen randomly, from June to July 2019. The subjects of the study were 59 cadres and nutritionists from 3 villages, namely Mantang, Teratak, and Sukadana. We evaluated 59 cadres and nutritionists using questionnaires and reviewed 205 MCHHs.

The questionnaires comprised demographic characteristics and asking if they measured weight, height/length, and head circumference, and use weight-for-age, height-for-age, weight-for-height, and head circumference-for-age growth chart, growth-monitoring practices frequency, reasons not measuring weight, length/height, and head circumference or not using growth chart, and knowledge about growth-monitoring. We also reviewed the completeness of growth charts in 205 MCHCs from those 3 villages. Growth-monitoring practices of responding cadres and nutritionists, and the completeness of MCHCS were described in tables using SPSS 20.

## 3. RESULTS

From 59 participants in three stunting villages in Lombok Tengah, 53 participants were cadres and 6 participants were nutritionists. Most of the participants were female and have been working for more than nine years. (Table 1) For the MCHH, 100% of WHO growth charts, including weight for height/length, height/length for age, and head circumference for age graphs, were not filled. Out of 59 participants, 23.7% (14 people) never participated in height/length measurement, and only 13.6% (8 people) did a head circumference measurement at least once. 94.9% (56 people) never filled or plotted WHO curves in maternal and child health book with the most reasons are did not know how to fill (64.4%), and 28.8% did not know that the growth chart can be filled and plotted. (Table 2)

**Table 1 Demographic characteristics**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age (Mean ± SD)</b>	36.38 ± 9.43	
<b>Sex</b>		
Female	50	84.7
Male	9	15.3
<b>Profession</b>		
Cadres	53	89.8
Nutritionists	6	10.2
<b>Work Experience</b>		
<1 year	4	6.8
1-4 years	12	20.3
5-9 years	10	16.9
>9 years	27	45.8

**Table 2 Practice of growth monitoring**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Measuring weight</b>		
Yes	59	100
No	0	0
<b>Measuring length/height</b>		
Yes	45	76.3
No	14	23.7
<b>Measuring head circumference</b>		
Yes	0	0

No	59	100
<b>Growth chart (WFA) is used</b>		
Yes	56	94.9
No	3	5.1
<b>Growth chart (HFA/LFA) is used</b>		
Yes	3	5.1
No	56	94.9
<b>Growth chart (WFH) is used</b>		
Yes	3	5.1
No	56	94.9
<b>Growth chart (HCFA) is used</b>		
Yes	0	0
No	59	100
<b>Reasons</b>		
No adequate knowledge	38	64.4
Not knowing that chart should be used	17	28.8
Not enough time	1	1.7
<b>WHO growth charts in maternal and child health books</b>		
Filled	0	0
Unfilled	205	100

#### 4. DISCUSSION

Routine screening of child growth and development is one of the mandatory services and recommended by health organizations (Batubara, 2016). It is essential for parents, cadres, and nutritionists to have adequate knowledge in child growth and development, and appropriate nutrition for the early life of the children as they could affect children's future health and their productivity in reaching their potentials (Mistry et al., 2012). In the US, this initiative is called "Healthy Steps", in which parents' knowledge and skills on parenting, especially in early childhood development, growth, and nutrition, were enhanced through child development practices. This initiative was first developed in the late 1990s and found to be very useful in enhancing positive child and parent outcomes, mainly through their early detection and family-centred care programs (Mistry et al., 2012; McLearn, Zuckerman, Parker, Yellowitz, & Kaplan-Sanoff, 1998).

In Indonesia, Integrated services post (Posyandu) program serves as the intervention to improve maternal and child health status in the community (Kementerian Kesehatan Republik Indonesia, 2015). Posyandu is a unit of activities carried out by the community with mentors from health workers from the Primary Health Care (Puskesmas) aimed at achieving optimal health degrees (Kemenkes RI, 2018). To get the community involved in health service, volunteers need to be recruited and trained to recognize the basic health care issues. The idea is that the volunteers, called as a village health worker (cadres), are part of the community which later would deliver health programs more

conveniently because they are closer to the community, compared to the public health official (Kemenkes RI, 2019). At Posyandu, cadres need to understand the messages contained in the MCHH as cadres share same responsibilities, including using the handbook as an information source on maternal and child health, facilitating mothers. Cadres are also responsible to fill KMS ("*Kartu Menuju Sehat*"), and acting as a community liaison to healthcare worker (Kemenkes RI, 2015). The WHO growth charts should be filled by health workers according to the child's growth and development screening schedule (Kemenkes RI, 2013). Trained health or non-health workers can do the measurement of body weight and height (Kemenkes RI, 2013). KMS is a card that contains child's standard growth curve based on anthropometric indices of body weight and age. If the weight does not increase one time, the cadres can provide counselling about the care and child's feeding. If the weight does not increase two times, or body weight is below the red line, cadres need to refer the children to health workers, so that children can get more advanced examination (Kemenkes RI, 2015).

Apart from weight-for-age, nutritional status parameter also includes weight-for-height and height-for-age, which are used to identify wasting and stunting in populations. Used alone, however, weight-for-age may underestimate the proportion of undernourished children, as some undernourishment may only be detected through weight-for-height and/or height-for-age (Corsi, Subramanyam, & Subramanian, 2011). Reliable measurements are vital for calculating anthropometric indicators, such as stunting, wasting and underweight among children, which is vital to monitor progress toward eradicating hunger, reducing health inequalities and assessing health interventions (Corsi

et al., 2011; Black, et al. 2008). Head circumference, however, can be used as a screening tool for child developmental or neurological disorders in clinical settings (Corsi et al., 2011).

Every child must undergo weight measurement every month at the Posyandu (Kemenkes RI, 2017). Meanwhile, measurement and assessment of height and head circumference are adjusted to the child's growth and development screening schedule (Kemenkes RI, 2013). Cadre training for nutrition measurement and assessment according to the WHO chart is one of the strategies that can be done to maximize growth screening conducted in Posyandu (Corsi et al., 2011).

We found that weight monitoring has been done well in Lombok rural area (100%) compared to growth monitoring practices in low income countries such as in North Gandar Zone in Ethiopia (50.4%) (Bilal, Moser, Blanco, Spigt, & Dinant, 2014). However, monitoring height and head circumference, and plot in on the growth chart are as important as weight measurement (Batubara, 2016). In addition, awareness study in India showed that routine monitoring practices did not show the awareness level of the providers, despite all the training among workers (Manhas & Dogra, 2012).

A study in Sragen, Indonesia, showed that several factors affect the completeness of maternal and child health book, including work experiences, workload, inner motivation, reward, and data utilization (Cahyani, Dharmawan, & Dharminto, 2016). Another observational study in rural Indonesia's using in-depth interviews also found that health and nutrition programs (including Posyandu) were not effectively executed because of financial problem and considered as lower priority by the local government (Sahanggamu, Purnomosari, & Dillon, 2017). The cadres sometimes have to spend their own money to keep the Posyandu running every month, even with insufficient reward and support from the local government (Sahanggamu et al., 2017). The gap observed between follow-up and supervision is mainly related to a shortage of resources, similar to challenges of the growth monitoring program in other low-income countries (Sahanggamu et al., 2017).

Prior observational studies in Cirebon and Demak, Indonesia, showed that growth monitoring program could significantly affect children's wellbeing and supportive environment. The influencing factors of growth monitoring program including policymakers, community, and cadres/healthcare practitioners as providers are needed (Sahanggamu et al., 2017; Nurcahyani, Hakimi, & Sudargo, 2011). Furthermore, political commitment, investment, strengthening of health systems, and training and supervision for providers must be evaluated and improved (Ashworth et al., 2008). A qualitative study in Ethiopia also showed that without mothers' awareness and husbands' supports, growth monitoring and promotion is unlikely to be successful (Bilal et al., 2014).

A growth monitoring program that is applied in Posyandu could prevent children from becoming underweight or stunted by early detection of growth faltering. However, it must be utilized optimally. The Indonesian Ministry of

Health has developed "Posyandu-Keluarga" (Family Integrated Health Center), but its practices across regions, its quality and effectiveness, have not been reported yet (Kemenkes RI, 2017; Dinas Kesehatan Provinsi NTB). As child malnutrition prevalence in Indonesia is still high, further studies are needed to evaluate this program, and enormous socialization should be done more (Kementerian Kesehatan dan Lembaga Penelitian dan Pengembangan Kesehatan Nasional, 2018)

## 5. CONCLUSION

In conclusion, all of WHO growth charts in subjects' MCHCs were not filled. Out of 59 participants, 23.7% (14 people) never participated in height/length measurement, and only 13.6% (8 people) did a head circumference measurement at least once. Most subjects never filled or plotted WHO curves in maternal and child health book with the most reasons are did not know how to fill (64.4%), and 28.8% did not know that the growth chart can be filled and plotted. Routine child growth monitoring should be done especially for children under two years of age. As child growth and development screening and monitoring are essential and could affect children in reaching their potentials, we suggest that government should socialize more about the importance and the urgency about child growth and development awareness to all parents and healthcare practitioners.

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