Field Articles

The early detection of child wasting in Indonesia amidst the COVID-19 pandemic

A child is weighed at a community health post in Indonesia

This article outlines a family-centred screening programme for the early detection of child wasting which was piloted in March 2020 in selected districts of the East Nusa Tenggara province, Indonesia, to mitigate COVID-19 pandemic-related disruption to existing services

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INDONESIA

Key messages:

- Caregiver screening correctly identified and confirmed 15 children aged 6-59 months (100% of those screened) with severe wasting and an additional 260 children (93% of those screened) with moderate wasting.
- Accuracy among caregivers was consistent across districts.
- Caregiver screening was highly accurate and not inferior to that of community health volunteers. This finding is consistent with prior evidence from sub-Saharan Africa that also finds that trained mothers and caregivers can measure mid-upper arm circumference effectively and this leads to earlier identification of wasting.

Background

An estimated 10% of Indonesian children under five years of age are wasted of which 3.5%, over two million children, are severely wasted (Ministry of Health, 2018). To address this persistent burden of child wasting, children's weight and mid-upper-arm-circumference (MUAC) are regularly screened by community health volunteers (CHV) at local integrated health posts (posyandu) before referral to primary health centres (PHC) for confirmation of diagnosis as needed. This community-based screening approach, initially piloted in 2015, has improved the coverage of both the screening and the treatment of severe wasting in the East Nusa Tenggara (NTT) province since it was scaled up in 2018 (Bait et al., 2019).

NTT is one of Indonesia's poorest provinces with limited access to healthcare facilities in isolated rural areas. The 2018 National Basic Health Survey indicated that rates of child wasting (12.8%) and severe wasting (4.6%) are higher in NTT compared to the national prevalence with even higher rates of wasting (14.8%) observed among children under two years of age. On top of wasting, NTT has been particularly affected by the COVID-19 pandemic with approximately 63,000 confirmed cases of COVID-19 in the province as of January 2022. Due to this high case rate, strict government-implemented health protocols, such as limiting community gatherings at the health posts, were implemented which majorly disrupted posyandu activities. Accordingly, in some areas, CHVs have continued to screen children for severe wasting through home visits, rather than asking parents to gather at posyandus, but the coverage of home-based visits has been limited. Therefore, screening disruptions stand to increase the burden of child wasting in Indonesia (Akseer et al, 2020).

The family-centred screening programme was piloted to mitigate disruptions in the early detection of child wasting. Specifically, parents and caregivers were trained to identify child wasting using a colour-coded MUAC tape (family-centred MUAC). MUAC measurements are inexpensive and generally sensitive to detecting wasting among young children. Moreover, prior evidence from Niger and Chad suggests that trained mothers can measure MUAC effectively and that this leads to the earlier identification of malnutrition (Blackwell et al, 2015; Gnamien et al, 2021). Although family-centred MUAC has been piloted in several East Asian countries, including India and Bangladesh, there is limited evidence as to the extent to which this approach may be feasible in South-

East Asia, especially during the COVID-19 pandemic. The objectives of this study were to 1) describe the family-centred MUAC pilot programme, and 2) describe the accuracy of MUAC measurements by caregivers and CHVs during the ongoing COVID-19 pandemic.

Programme description

In March 2020, the NTT province health office and UNICEF introduced the family-centred MUAC pilot programme to strengthen the existing community health platform in two districts: Kupang Municipality (an urban setting) and Kupang District (a peri-urban setting). Between April and December 2020, 10 PHCs in Kupang Municipality and 11 PHCs in Kupang District implemented Family MUAC screening. A basic overview of the programme's concept was provided to the participating PHCs. Supported by UNICEF, the PHCs agreed on mechanisms to train caregivers, which included COVID-19 safe protocols, as well as the data reporting procedures.

The programme employed a train-the-trainer model. First, the CHVs received orientation from the PHC health workers on how to train caregivers; CHVs were provided with MUAC tapes and information, education and communication materials for distribution to caregivers. Then, CHVs were responsible for training and mentoring five to 12 nearby caregivers either online or in-person based on an existing list of children under the age of five years who lived within their area of operation.

No caregivers declined to take part in this pilot initiative given their previously established relationship with the CHVs. Approximately 19,000 (5,700 online and 13,300 in-person in Kupang Municipality) and 14,000 (980 online and 13,020 in-person in Kupang District) caregivers received training on screening children aged 6–59 months for wasting using colour-coded MUAC tapes (Figure 1). Caregivers were further instructed to bring their children to PHCs for further examination if they had a red MUAC (<115mm), yellow MUAC (115<125mm) or were visibly thin. The training mechanism depended on the number of COVID-19 cases in a particular area and the caregivers' access to mobile technology.

Additional screening by CHVs continued through home visits. There was limited supervision of the CHV and caregivers' activities after the training due to the COVID-19 social distancing restrictions. However, health workers continued to conduct monthly visits to each village and, as appropriate, took such opportunity to strengthen the CHVs' capacity by conducting joint home visits to households with children aged 6–59 months.

CHVs collated and provided village-level data to PHCs on the total number of children screened, screening results (e.g., red and yellow MUAC), the total number of children referred

Figure 1 Training materials provided to caregivers on mid-upper arm circumference tape and measurement
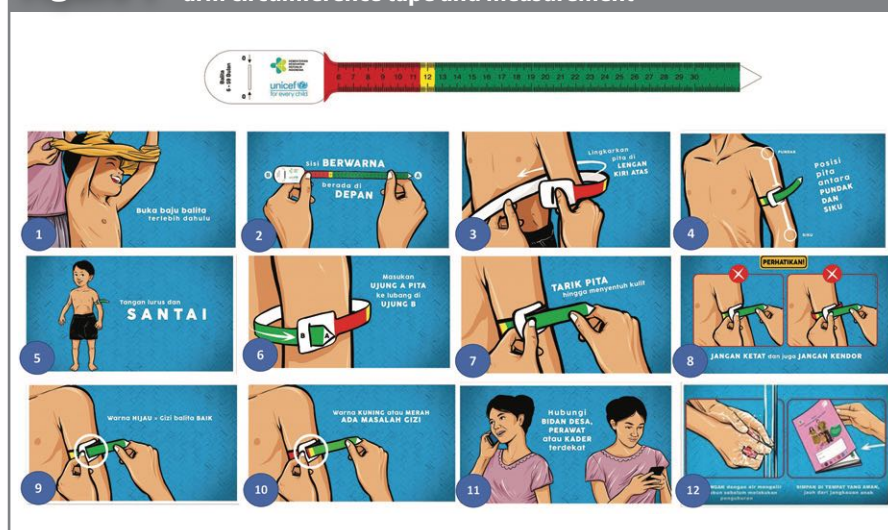
to PHCs, case confirmation and the number of children treated for severe wasting. Descriptive statistics are presented as percentages overall and by district.

Programme results

Overall, approximately 30,000 children aged 6-59 months (~58% of those eligible) were screened by CHVs and caregivers in Kupang District and Kupang Municipality between April and December 2020 (Table 1). Similar proportions of children were screened by caregivers in each district.

Screening resulted in 2,249 children being referred to PHCs, including 1,684 children screened by CHVs and 565 by caregivers, for confirmation of their wasting diagnosis. Of these, less than half (42%) of children visited a PHC as instructed with a higher proportion of children screened by caregivers (86%) visiting the PHC compared to those referred by CHVs (27%). This trend was largely driven by differences in attendance among children in Kupang District; in this peri-urban setting, only 26% (N=438) of children referred by CHVs attended the health centres compared to 87% (N=379) of children referred by caregivers. Attendance was more comparable among CHVs (100%) and caregivers (86%) in Kupang Municipality.

Caregivers' MUAC measurements were highly accurate. Overall, caregiver screening correctly identified and confirmed 15 children aged 6-59 months (100% of those screened) with severe wasting and an additional 260 children (93% of those screened) with moderate wasting; accuracy among caregivers was consistent across districts. Among CHVs, the accuracy of screening measurements was somewhat lower; health workers confirmed 82% of children screened were severely wasted (red MUAC) and 49% of children screened were moderately wasted (yellow MUAC). All of the children diagnosed with severe wasting received the correct treatment.

Successes and challenges

There is growing evidence that parents and caregivers can play an important role in screening for wasting through MUAC measurement (Buttarelli, Woodhead & Rio, 2021). Importantly, caregiver screening was highly accurate and not inferior to that of the CHVs amidst the COVID-19 pandemic. This finding is consistent with the limited prior evidence, mostly from sub-Saharan Africa, that also finds that trained mothers and caregivers can measure MUAC effectively and this leads to the earlier identification of malnutrition.

Notably, highly accurate measurements among caregivers occurred despite relatively limited training and supervision. Due to COVID-19, caregivers were only trained once and they received just one page of instructions and/or information to access online videos. Given the limited training, it will be important to consider incorporating refresher training courses to ensure the continued uptake and regular practice of MUAC measurements. Although capacity building to train caregivers on MUAC measurements was limited, this data suggests that family-centred screening may be a promising approach to the early detection of child wasting in Indonesia. More regular and earlier detection of wasting could reduce the risk of mortality and morbidity among children aged 6-59 months.

In this programme, we found that a larger proportion of children screened by caregivers attended the PHCs as recommended. The differences in attendance suggest that the trained caregivers may have had better knowledge and awareness of wasting, and the risks of wasting, as a result of the training provided and in turn a greater urgency related to taking their children to PHCs when needed compared to caregivers of children referred by CHVs. Challenges to accessing PHCs in the Kupang District, a peri-urban setting, such as travelling

Caregiver receiving in-person training from CHW on MUAC measurement. Indonesia, 2020

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longer distances and the high cost of transportation, may have also played a role, as has been reported in one prior review (Buttarelli et al., 2021). It is also plausible that caregivers who opted to participate in the training were more generally motivated regarding care-seeking behaviours.

There are several limitations of this pilot study. Firstly, the cross-sectional design and ecological (i.e., village-level) data limits study conclusions so any inferences must therefore be made with caution. Secondly, the programme was only implemented in selected districts in Indonesia and thus may not be generalisable to other settings.

Conclusion

Despite limitations, the data suggests that the programme increased capacity for the screening and treatment of child wasting during the pandemic. Given the accuracy of caregiver screening, continuing the family-centred MUAC screening programme beyond the COVID-19 pandemic warrants consideration. Future work should aim to better understand the differences in attendance between caregivers and CHV referrals in order to address any barriers to case confirmation.

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Table 1 — Screening of child wasting by trained community health volunteers and caregivers

	Overall (N=50,382 eligible)[1]			Kupang District (N=29,561 eligible)[1]		Kupang Municipality (N=20,821 eligible)[1]	
	Total	CHVs	Caregivers	CHVs	Caregivers	CHVs	Caregivers
Number of children screened[2]	29,163 (58%)	17,125 (34%)	12,038 (24%)	15,059 (51%)	7,664 (26%)	2,066 (10%)	4,374 (21%)
Screening Results:[3]							
Red MUAC	37 (0.1%)	22 (0.1%)	15 (0.1%)	21 (0.1%)	9 (0.1%)	1 (<0.1%)	6 (0.1%)
Yellow MUAC	544 (2%)	265 (2%)	279 (2%)	248 (2%)	192 (3%)	17 (1%)	87 (2%)
Green MUAC and not visibly thin	26,914 (92%)	15,441 (90%)	11,473 (95%)	13,396 (89%)	7,226 (94%)	2,045 (99%)	4,247 (97%)
Green MUAC but visibly thin	1,668 (6%)	1,397 (8%)	271 (2%)	1394 (9%)	237 (3%)	3 (0.1%)	34 (1%)
Health Worker Confirmation:							
Referred for confirmation[4]	2,249 (8%)	1,684 (10%)	565 (5%)	1,663 (11%)	438 (6%)	21 (1%)	127 (3%)
Attended confirmation[5]	947 (42%)	459 (27%)	488 (86%)	438 (26%)	379 (87%)	21 (100%)	109 (86%)
Confirmed severe wasting cases by MUAC[6]	33 (89%)	18 (82%)	15 (100%)	18 (86%)	9 (100%)	0 (0%)	6 (100%)
Confirmed moderate wasting cases by MUAC[7]	389 (72%)	129 (49%)	260 (93%)	119 (48%)	183 (95%)	10 (59%)	77 (89%)
Received treatment for severe wasting[8]	206 (100%)	97 (100%)	109 (100%)	97 (100%)	74 (100%)	0 (NA)	35 (100%)

MUAC = mid-upper-arm-circumference; NA = not applicable
[1] Number of children aged 6-59 months targeted for screening
[2] Number (%) who were screened among those eligible
[3] Number (%) among those screened
[4] Number (%) with red or yellow MUAC or green MUAC but visibly thin
[5] Number (%) who attended health clinics out of the total number referred for screening
[6] Number (%) out of the total number of children screened red
[7] Number (%) out of the total number of children screened yellow
[8] Number (%) of severely wasted children treated based on MUAC and weight-for-height z-score

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