



## Validation of Integrated Health Services Data on Coverage of Weighing Programs of Children Under Five



Kadek Tresna Adhi <sup>a</sup>, Ni Wayan Arya Utami <sup>b</sup>, Putu Ayu Swandewi Astuti <sup>c</sup>, I Gusti Ngurah Edi Putra <sup>d</sup>

Article history: Received 9 May 2018, Accepted: 30 August 2018, Published: 21 November 2018

### Correspondence Author <sup>a</sup>



### Keywords

cadre;  
case finding;  
integrated health  
service;  
malnutrition;  
under-five children;

### Abstract

The discrepancies between the numbers of children suffering from severe malnutrition and/or wasting and children being detected was likely owing to the low socio-economic background of the children and distance needing to be traveled to access integrated health service location. These children did not undergo regular weight for age screening, thus became disengaged with integrated health services, and were not sufficiently observed by health workers. This situation provided impetus to conduct a study into the validation of collected weighing coverage data from integrated health services with the reality in the field (D/S). This case study was conducted in Dusun Jumenang, Bukit village, Karangasem Regency. The study compared weighing coverage and nutritional secondary data on those children who have undergone screening at the integrated health service with the number of children identified through active case finding in the field. Five village health workers were trained in mobile measuring skills with a focus on nutritional status and were asked to actively search and find all under five children living in the village. Nutritional status data were collected through weighing scales and the nutritional status table. Validation results from active case finding identified 35 children under five in total, meanwhile data from integrated health services recorded 9 children. Anthropometric results conducted by health workers indicated that 31 children (88,6%) were within normal nutritional status, 1 child (2,8%) was suffering from malnutrition and 3 children (8,6%) were overweight. Findings indicate that in order to comprehensively identify children suffering from malnutrition active case finding is a more effective method as opposed to passive case finding particularly in areas of low socio-economic status.

<sup>a</sup> School of Public Health, Faculty of Medicine, Udayana University, Denpasar, Indonesia

<sup>b</sup> School of Public Health, Faculty of Medicine, Udayana University, Denpasar, Indonesia

<sup>c</sup> School of Public Health, Faculty of Medicine, Udayana University, Denpasar, Indonesia

<sup>d</sup> Center for Public Health Innovation (CPHI), Faculty of Medicine, Udayana University, Denpasar, Indonesia

*e-ISSN: 2550-696X, p-ISSN: 2550-6978 ©Copyright 2018. The Author.  
 SS Journals Published by Universidad Técnica de Manabí.  
 This is an open-access article under the CC-BY-SA license  
 (<https://creativecommons.org/licenses/by/4.0/>)  
 All rights reserved.*

## Contents

Abstract.....	65
1. Introduction.....	66
2. Materials and Methods.....	66
3. Results and Discussions.....	67
4. Conclusion.....	69
Acknowledgements.....	69
References.....	70
Biography of Authors.....	71

## 1. Introduction

The 2010 Baseline Health Survey estimated that the number of under-five children suffering from severe malnutrition in the Province of Bali, measured by an anthropometric method based on the index weight for age z-score (WAZ) was 1.7% or approximately 5,690 children (MoH Indonesia, 2010). This index illustrated acute and chronic nutritional problems were caused by poor nutritional intake and/or as a result of suffering from infectious conditions, for example, diarrhea. The prevalence of underweight children also called wasting found in the study was based on the index weight for height z-score (WHZ) was 5.2% or approximately 17,000 children. Wasting usually occurs due to acute causes, among others, due to lack of food intake or acute illness. Only 269 children suffering from severe malnutrition and wasting were detected and treated by integrated health workers or providers and reported to the Bali Health Office over the years 2008 to 2012 (Bali Health Office, 2013). Therefore, there were around 16,700 wasting children who never received care and treatment.

High discrepancies in the number of those suffering from malnutrition and those accessing services may be attributed to the low socio-economic backgrounds of the familial units or the distance to the healthcare provider. The weight of these children was not regularly screened, thus these children became disengaged from the integrated health service and from examination by healthcare providers (Agarwal *et al.*, 2017). These discrepancies provided an incentive for a study into cross-checking or validation of recorded data on children suffering from malnutrition with the reality in the field.

## 2. Materials and Methods

Karangasem Regency was selected as above 30% of the villages within are categorized as *TH (Targeted Household)* (BPMPD, 2013). From these villages, Bukit was selected, Karangasem Regency. The first step in the study was one *focus group discussion (FGD)* with healthcare workers, village administration heads and public figures in Bukit Village. FGD aimed to explore perception and understanding of active case finding strategies and investigate inhibiting or enabling factors for implementing this strategy. Afterward, mapping of the study area was carried out based on underachievement of collected weighing coverage data from integrated health services with the reality in the field (D/S) target, low community participation level and on high-risk areas based on a suggestion from respondents. Based on this mapping, Dusun Jumenang was selected as the trial site. Secondary data from monthly records such as the numbers of under-five children registered and those accessing the integrated health service in Dusun Jumenang was analyzed.

Five healthcare workers were chosen and socialized on active case finding strategies and trained in how to measure nutritional status through anthropometrics, for example, measurement of body weight using carryable weighing scales. Anthropometric results were interpreted by comparing body weight data and aged based on Anthropometric Standards in Child Nutritional Status, Ministry of Health, Republic of Indonesia

(MoH Indonesia, 2011). If healthcare workers identified children under five suffering from malnutrition, the next step was to refer them to Bukit village midwifery center for re-measurement in order to further validate findings. Incentives were given to involved healthcare workers, 10.000 IDR/child, for visiting and measuring their nutritional status. If healthcare workers identified children suffering from malnutrition or severe malnutrition, their incentive was 100,000 IDR/child. Field data were collected over 7 days, followed by data validation, comparing numbers of children under five suffering from malnutrition identified through active case finding and integrated health service registered data. Data were descriptively analyzed. This study has obtained ethical approval from the Ethics Committee, Faculty of Medicine Udayana University/Sanglah General Hospital, Denpasar.

### 3. Results and Discussions

Dusun Jumenang was one of “*dusun*” (smaller than village) on Bukit Village, Karangasem District, Karangasem Regency. This hilly *dusun* is very hard to reach and relatively inaccessible. There are 149 households in this area with 58 households categorized having low socio-economic status and subsists through agricultural pursuits. Even though the closest integrated health service was around 2 km or more from the resident's homes, the road leading to it was through the very difficult terrain. According to the respondents, difficult access to the service clearly inhibited the ability of families to bring their child in for weighing and examination. There were five healthcare workers in Dusun Jumenang, aged between 26 years to 40 years old, 3 were male and 2 were female. The selected healthcare workers who had been working for more than 5 years, also worked in agricultural pursuits.

Five healthcare workers were trained to measure nutritional status. Then they were asked to conduct active case finding strategy by visiting resident's house to collect data and to measure nutritional status. Active case finding identified 35 children under five, however, validation indicated that data from the integrated health service recorded only 9 children. Study results indicated that only 25.7% children under-five years were registered at the integrated health service. The Strategic Plan of the Ministry of Health 2010-2014 stipulates that an output indicator in the area of nutritional improvement (malnourished children identified and receiving treatment) should be 100% and coverage weighing program for under-five years children in integrated health service should be 85%. Active case finding strategy was very effective in identifying cases and for early intervention (Collins *et al.*, 2005).

Based on World Health Organization (WHO) recommendations, active case finding is an effective part of community-based malnutrition management for under-five years children. Community-based malnutrition management consists of early case detection and therapeutical management such as therapeutical food or highly nutritious food at home, given to children with malnutrition without any medical complication. In combination with facility-based management for cases with medical complication, the implementation of community-based management would also help to prevent mortality caused by malnutrition complications in children (WHO, 2007).

As the key contact for community-based malnutrition management, active case finding can be carried out by volunteers who are willing to be trained and participate in the program. In areas with limited facilities and with low socio-economic status, most of the malnutrition cases were not referred to the health facilities, therefore it is evident that strong community involvement is needed in order promptly address cases. Active case finding has also proved to reduce numbers of malnutrition cases needing hospitalisation in the healthcare facilities (WHO, 2007).

Lower coverage of weighing programs for children under five years by integrated health service (D/S) in Jumenang could be caused by many factors, one of is the low capacity of healthcare providers and low community participation. In addition, integrated health services are sometimes located at a distance and/or are hard to access.

Table 1 shows the characteristics of children under-five identified by participating healthcare workers in Dusun Jumenang.

Table 1  
Characteristics of Children Under-Five in Dusun Jumenang

Characteristic	n (%)
Age (months)	
≤24 months	18 (51,4)
>24 months	17 (48,6)
Gender	
Males	18 (51,4)
Females	17 (48,6)
Nutritional Status	
Overweight	3 (8,6)
Normal	31 (88,6)
Malnutrition	1 (2,8)

About 51.4% of children under five identified by the healthcare workers were aged under 2 years old and male. Anthropometric measurement using the Weight for Age z-score (WAZ) indicator as conducted by healthcare workers indicated that most of the children (88,6%) were normal nutritional status, however, 1 child (2,8%) was identified as malnourished and 3 children (8,6%) were overweight.

Figure 1 below is the children growth curve according to the WHO standard, 2007. This curve shows that the majority of children under five in this village were in the range of z-score -2.39 to 4.26 SD with the average z-score of -0.13 SD. This curve shows although most children maintained normal nutritional status, children experiencing malnutrition or overweight were also identified.

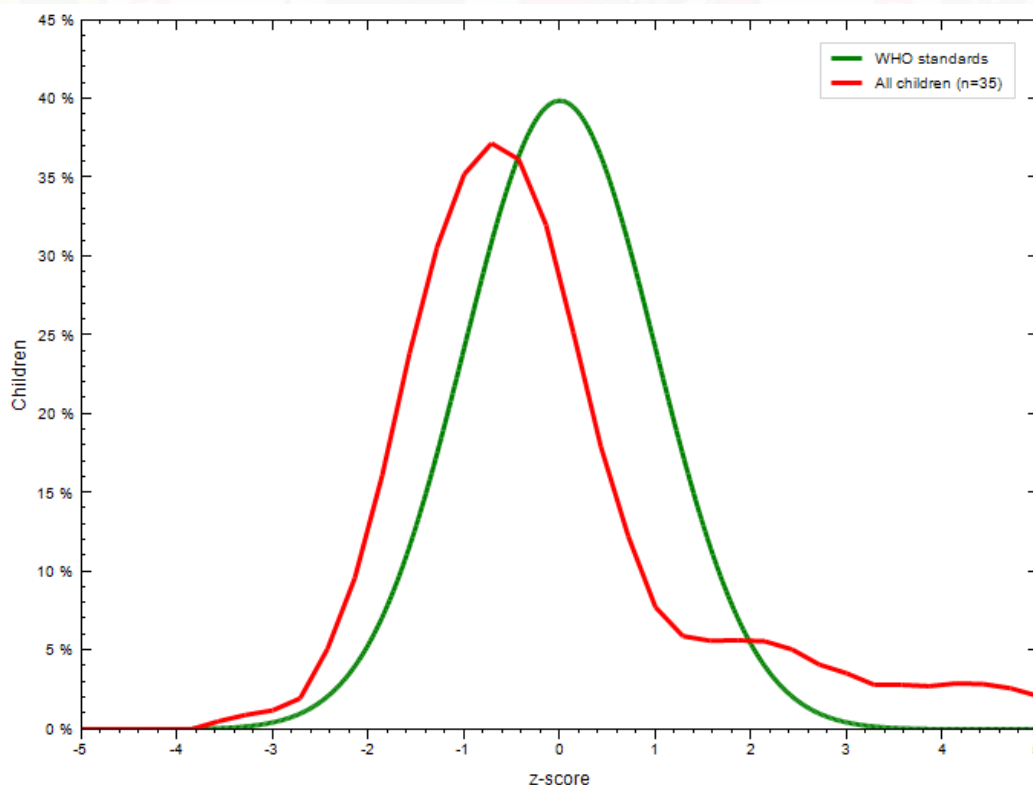


Figure 1. Nutritional status based on WAZ at Dusun Jumenang

The study indicates that children under-five experiencing malnutrition or overweight lived a distance from the integrated health service and had yet to bring their child to the center for examination. This finding aligns



with others, wherein children who were regularly brought in for screening had better nutritional status in comparison with families who rarely attended (Hidayat & Jahari, 2011).

The majority of children identified had normal nutritional status. This finding conflicts with assumptions as even in an area with low socio-economic status the majority of children were healthy, and some overweight. This was a form of positive deviance. A study conducted in other Indonesian provinces of Nangroe Aceh Darussalam (NAD), West Papua, Daerah Istimewa Yogyakarta (DIY) and Lampung Provides showed that determinant positive deviance was affected by salary, and also affected by the mother's feeding habits. Mothers with effective money management skills as well as feeding behaviours can have a positive impact on children's nutritional status (Sab'atmaja *et al.*, 2010).

One weakness of this study was that the nutritional status was not measured against children's height parameters. A study conducted in Bogor in 2010, found that more numbers of children under-five year suffered from chronic malnutrition characterized by high prevalence of children under-five with stunting (Sukandar *et al.*, 2010).

Community healthcare workers are the key contact within every aspect of the integrated health service provider, acting as instructors and mentors, including being responsible to weight screening. In order to increase the healthcare workers capacity and level of motivation, special consideration and appreciation must be made either in the form of incentives, skills building, and improved facilities, this includes targetted work in nutrition.

During FGD, respondents suggested that incentives be provided to the healthcare workers involved in the active case finding. Incentives facilitated data collection on numbers and nutritional status of children under-five years that provided vital insight into the overall nutritional situation of children in Dusun Jumenang.

The WAZ indicator used in this study indicated general nutritional problems. Unfortunately, as only this indicator was used, data on chronic or acute nutritional problems could not be obtained as body weight was not correlated with height only with age. For instance, lower body weight could be due to stunting or chronic diarrhea or other acute infectious diseases (Gibson, 2005; Bali Health Office, 2013).

Healthcare workers played an integral role in increasing community participation in child weight screening. Results from a study on the role of healthcare workers and "kelian adat" (village heads) in efforts to increase the independence of integrated health services in Bali, 2008 indicated that home visits by workers increased the overall program coverage (Maisya & Putro, 2011). Recognition of the contribution of healthcare workers in the form of incentives worked to increase motivation and enthusiasm. However, with monetary incentive interventions, there is always a concern for future sustainability. Therefore, other strategies need to be considered.

#### 4. Conclusion

This study indicated that coverage of the weighing program in integrated health service in Jumenangan is low. Active case finding carried out by healthcare workers is an effective strategy for the early detection of children under five suffering from malnutrition in the community. Training and incentive provision in active case finding increased participants motivation in finding children under-five years, however, there would always be sustainability concerns with interventions dependent on monetary incentives.

#### Acknowledgments

The authors would like to thank Udayana University, the head of public health research group, village midwifery, public figures and healthcare workers of Dusun Jumenang for their participation and cooperation in conducting this study. The study was funded by Udayana University (Grant No. 238-35/UN14.2/PNL.01.03.00/2014).

## References

- Agarwal, R., Jain, P., Ghosh, M.S. & Parihar, K.S. (2017). Importance of primary health care in the society. *International Journal of Health Sciences (IJHS)*, 1(1):6-11.
- Badan Pemberdayaan Masyarakat dan Pemerintahan Desa (BPMPD) Provinsi Bali - Community Empowerment and Village Governance Board of Bali Province. (2013). *Petunjuk teknis sistem kewaspadaan pangan dan gizi (SKPG) (Technical guideline of food and nutrition alert system)*. Denpasar: BPMPD Provinsi Bali.
- Bali Health Office. (2013). *Profil kesehatan provinsi Bali (Health profile of Bali Province)*. Denpasar: Bali Health Office.
- Collins, S., Sadler, K., Dent, N., Khara, T., Guerrero, S., Myatt, M., Saboya, M. & Walsh, A. (2006). Key issues in the success of community-based management of severe malnutrition. *Food and Nutrition Bulletin*, 27(3 Suppl):S49-82.
- Gibson, R.S. (2005). *Principles of nutritional assessment* (second edition). New York: Oxford University Press.
- Hidayat, T.S. & Jahari, A.B. (2012). Perilaku pemanfaatan posyandu hubungannya dengan status gizi dan morbiditas balita (Utilization of health services (posyandu) related to nutritional status and infant morbidity of baby five years). *Buletin Penelitian Kesehatan*, 40(1):1-10.
- Maisya, I.B. & Putro, G. (2011). Peran kader dan klian adat dalam upaya meningkatkan kemandirian posyandu di Provinsi Bali: studi kasus di Kabupaten Badung, Gianyar, Klungkung dan Tabanan (The role of cadre and head village to improve posyandu services in Bali Province: a case study in Badung, Gianyar, Klungkung, and Tabanan Regency). *Buletin Penelitian Sistem Kesehatan*, 14(1): 40-48.
- Ministry of Health (MoH) Indonesia. (2010). *Riset kesehatan dasar 2010 (national health research 2010)*. Jakarta: MoH Indonesia.
- Ministry of Health (MoH) Indonesia. (2011). *Standar antropometri penilaian status gizi anak (The standard of antropometric assessment for child nutritional status)*. Jakarta: MoH Indonesia.
- Sab'atmaja, Khomsan, A. & Tanziha, I. (2010). Analisis determinan positive deviance status gizi balita di wilayah miskin dengan prevalensi kurang gizi rendah dan tinggi (Determinants of positive deviance nutritional status of under five year old children in poor areas with low and high prevalence of undernutrition). *Jurnal Gizi dan Pangan*, 5(2):103-112.
- Sukandar, D., Khomsan, A., Anwar, F., Riyadi, H. & Mudjajanto, E.S. (2010). Health and nutritional status of children under five years in posyandu nutrition program. *Jurnal Gizi dan Pangan*, 5(3): 171-177.
- World Health Organization (WHO). (2007). *Community-based management of severe acute malnutrition*. Retrieved from: [http://www.who.int/nutrition/topics/Statement\\_community\\_based\\_man\\_sev\\_acute\\_mal\\_eng.pdf](http://www.who.int/nutrition/topics/Statement_community_based_man_sev_acute_mal_eng.pdf).

### Biography of Authors

	<p>Kadek Tresna Adhi, S.KM., M.Kes. is a lecturer at School of Public Health, Faculty of Medicine, Udayana University and a doctoral student in the postgraduate program in public health at Udayana University. Jl. P.B. Sudirman, Denpasar, Bali, Indonesia 80232, Ph. +6281236288867  Email: <a href="mailto:ktresnaadhi@unud.ac.id">ktresnaadhi@unud.ac.id</a></p>
	<p>dr. Ni Wayan Arya Utami, is a lecturer at School of Public Health, Faculty of Medicine, Udayana University.  Email: <a href="mailto:arya_utami@yahoo.com">arya_utami@yahoo.com</a></p>
	<p>dr. Putu Ayu Swandewi Astuti, MPH, is a lecturer at School of Public Health, Faculty of Medicine, Udayana University.  Email: <a href="mailto:ayu_swandewi04@yahoo.com">ayu_swandewi04@yahoo.com</a></p>
	<p>I Gusti Ngurah Edi Putra, S.KM., MA, is a researcher at the Center for Public Health Innovation (CPHI), Faculty of Medicine, Udayana University.  Email: <a href="mailto:ediputra.ign@gmail.com">ediputra.ign@gmail.com</a></p>