



Association of both Water, Sanitation and Hygiene (WASH) and Infant and Young Child Feeding (IYCF) practices with childhood malnutrition in Lao PDR: a cross-sectional study of the 2017 Lao Social Indicator Survey II



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Somphos Vicheth Som¹, Frank T. Wieringa², Maiza Campos Ponce¹, Katja Polman^{1,3}, Prosper Dakurah⁴, David Duncan⁴, Janneke Blomberg⁴, Sitthorot Rasphone⁵, Marinka van der Hoeven¹

¹Department of Health Sciences, VU Amsterdam, The Netherlands. ²UMR Qualisud, IRD, France. ³Department of Public Health, Institute of Tropical Medicine, Belgium. ⁴UNICEF Lao PDR. ⁵Development Research Institute, Ministry of Planning and Investment, Lao PDR.

Introduction

Prevalence of childhood malnutrition, manifested through stunting and wasting, remains high in Lao PDR. Programs to address this issue implement a variety of interventions, but there is limited evidence on combined effects of Water, Sanitation and Hygiene (WASH) and Infant Young Child Feeding (IYCF) on child growth.

Aim: to assess whether WASH and IYCF, either alone or combined were associated with malnutrition among Lao children aged 6 to <24 months.

Methods

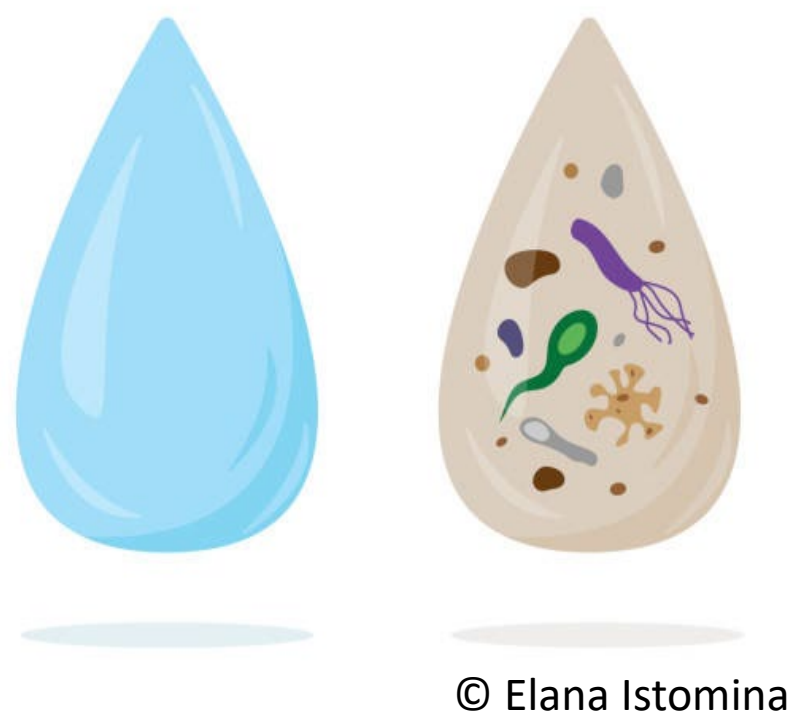
This study used data from the Lao Social Indicator Survey II (LSIS II) survey conducted in 2017 using multi-stage probability proportional to size sampling. Total sample size was 3,375 children aged 6 to 24 months including data on drinking water quality of 537 households.

- Stunting and wasting were calculated according to the WHO Growth Child Standards.
- WASH indicators such as access to improved drinking water source, improved sanitation and basic hygiene according to the WHO Joint Monitoring Program guideline were coded as binary outcomes.
- IYCF indicators included minimum dietary diversity (MDD), minimum meal frequency (MMF) and minimum acceptable diet (MAD) using WHO classifications.
- E.coli was a measure of colony forming units (CFUs) in drinking and source water was coded as low (<1 per 100 ml), moderate (1-10 per 100 ml), high (10-100 per 100 ml), and very high (>100 per 100 ml).

Odd ratios and 95% confident interval (CI) were used to describe the strength of the association between child growth status and its factors.

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Results



reduction of the risk on stunting

The combined effect of access to improved sanitation, basic hygiene and adequate IYCF reduced the risk of stunting more than each practice alone or than in different combinations (adjusted OR: 0.54; 95%CI: 0.41, 0.73; p-value<0.01; controlled for drinking water source, regions, child’s sex, child’s age and maternal education).



reduction of the risk on wasting

The combined effect of access to basic hygiene and adequate IYCF reduced the risk of wasting more was greater than each practice alone or than in different combinations (adjusted OR: 0.64; 95%CI: 0.44, 0.92; p-value<0.01; controlled for regions, child’s sex, child’s age and maternal education).

For more detail and full tables, scan QR code on top.

Results

Most children lived in households with access to an improved drinking water source (82.5%), however over 83% of these drinking water sources were contaminated with *E.coli*.

Table 1: Nutritional status, WASH practices, water quality and IYCF practices among children aged 6 to <24 months.

	Total (weighted)	Frequency (weighted)	Percentage (weighted)
Nutritional status:			
Stunted (HAZ<-2SD)	3,286	949	28.9
Wasted (WHZ<-2SD)	3,314	336	10.1
WASH practices:			
Access to improved water source	3,344	2,760	82.5
Access to improved sanitation	3,344	2,384	71.3
Access to basic hygiene	3,345	1,733	51.8
Open defecation	3,344	926	27.7
Safely disposal child’s stool	3,344	830	24.8
Water quality: <i>E.coli</i> contamination in drinking water			
Low (<1 per 100 ml)	512	69	13.5
Moderate (1-10 per 100 ml)	512	92	17.9
High (11-100 per 100 ml)	512	160	31.2
Very high (>100 per ml)	512	191	37.4
Feeding practices:			
Received MDD	3,213	1,144	35.6
Received MMF	3,217	2,227	69.2
Received MAD	3,213	916	28.5
Combined interventions			
Access to improved WASH (improved drinking water source +improved sanitation +basic hygiene)	3,344	1,387	41.5
Access to improved WASH and adequate IYCF (improved drinking water source +improved sanitation +basic hygiene + adequate IYCF)	3,211	555	17.3

Conclusion

Stunting and wasting among children aged 6 to <24 months remains a serious public health issue in the Lao PDR. Our study shows not only that WASH and IYCF practices were associated with both forms of malnutrition, but also that **combining interventions to improve both WASH and IYCF simultaneously are likely to have a greater impact.**

Moreover, access to improved drinking water was not sufficient in our study to provide access to safe drinking water, as most drinking water was still contaminated with *E. coli*. Thus, there is a need of **multi-factorial interventions** such as increasing access to improved WASH and nutrition to reduce child malnutrition in Lao PDR.