

Do ultrasound examinations during antenatal contacts by a portable ultrasound device improve the accuracy of estimating gestational age of the newborn infants at birth?

**A case study in El Paraiso and Lempira provinces,
the Republic of Honduras.**

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COI 開示

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演題発表内容に関連し、発表者らに開示すべき

COI 関係にある企業などはありません。

Background

- Every year, 2.7 million babies die for the first 28 days of life world wide and preterm birth is the leading cause of the deaths.
- It is important to know accurate gestational ages (GAs) of preterm babies because their survival chances largely depend on GAs.
- however, it is difficult to know GAs in developing countries.
- One of the reasons is the lack of ultrasound examinations to determine Expected Date of Delivery (EDD) in the early stages of pregnancy.

Objective

- To assess whether or not ultrasound examinations at antenatal contacts by primary-level medical workers with a portable device improve accuracy of gestational ages at birth.

Methods

- The study is a part of the project called PROAPS (Project for Strengthening Primary Health Care System based on the "National Health Model" in English).
- The project aimed to introduce Family Health Team (FHT) to improve primary health care services in rural communities.
- We provided 2-week training course on obstetrics ultrasonography for FHTs in June 2017. 12 participants (6 doctors in social service, 6 nurses) selected from three FHTs received the training and were provided with a portable ultrasound device to each FHT.



3.5MHzコンベックスタイプ(深部用)
 型式名:LSMUS-P0301-C35
 質量:約130g
 寸法:幅85mm×長さ140mm×厚み35mm



MUSシリーズは、プローブをパソコンやアンドロイドタブレットなどの画像表示機器に接続するだけで画像診断ができます。

*本装置を使用する為には、画像表示機器仕様を満たすコンピュータ装置が必要です。(3ページ目に記載)

軽量
 約130g

STC

Contrast	30	LMP	07-12-2016
Gain	62	LMP-GA	29w+5d
Depth	23.5cm	LMP-EDD	13-09-2017
Gamma	0.950	Hadlock3	
		EFW	1609 g
		EFW-GA	31w+0d +-10d
		EFW-EDD	04-09-2017

GA table [JSUM '03]

BPD	7.85cm	31W+5	1W+5SD	BPD-EDD	30-08-2017	
FL	5.78cm	32W+3	1W+4SD	FL-EDD	25-08-2017	
AC	46.07cm ²	26.29cm	32W+3	1W+6SD	AC-EDD	25-08-2017
CRL				CRL-EDD		
				CRL-EDD		
				CRL-EDD		

LMP 07-12-2016 Save EFW

Date	EFW	EFW-GA	EFW-EDD
03-07-2017	1609g	31w+0d +-10d	04-09-2017

Image Cine Image Freeze

Method

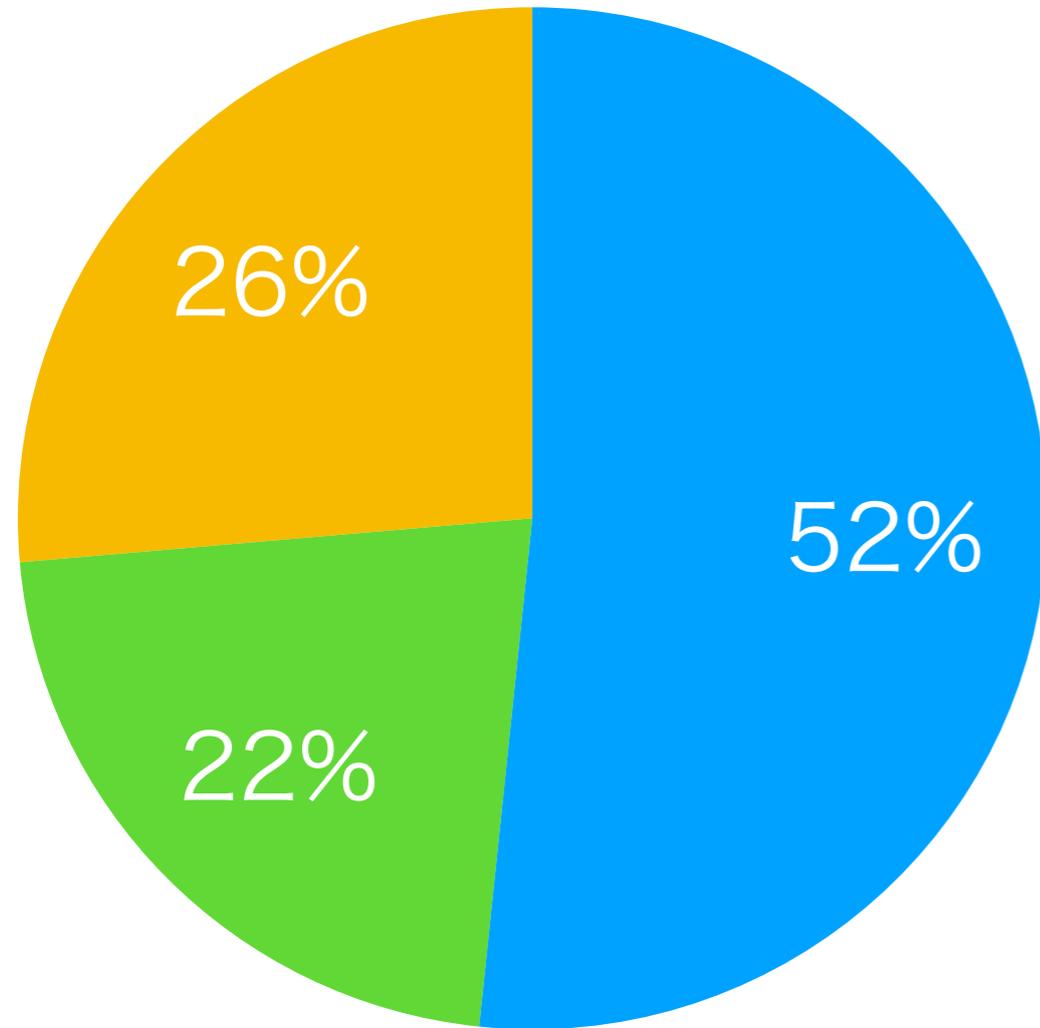
- Retrospective observational study was conducted in February 2018 on women who had received ultrasound examinations with the portable device from August 2017 to January 2018 and whose delivery records were available.
- We compared the number of the compatible sets of birth-weights and GAs determined from Last Menstrual Period (LMP) or Fundal Height (FH) with the number of compatible sets of birth-weights and GAs from ultrasound.
- Fisher exact test was used and p value <0.05 was considered to be significant.

Results

	Median (min-max)
Total N = 91	
Maternal age (yrs)	25 (14-43)
Gravidity	2 (0-9)
Parity	1 (0-8)
Number of antenatal contacts	5 (1-10)
GA at 1st contact (wks)	11 (4-31)
GA at 1st ultrasound (wks)	30 (12-40)
Number of cases without information of LMP (%)	14(15.4)
Birth weights	3020 (2201-4700)

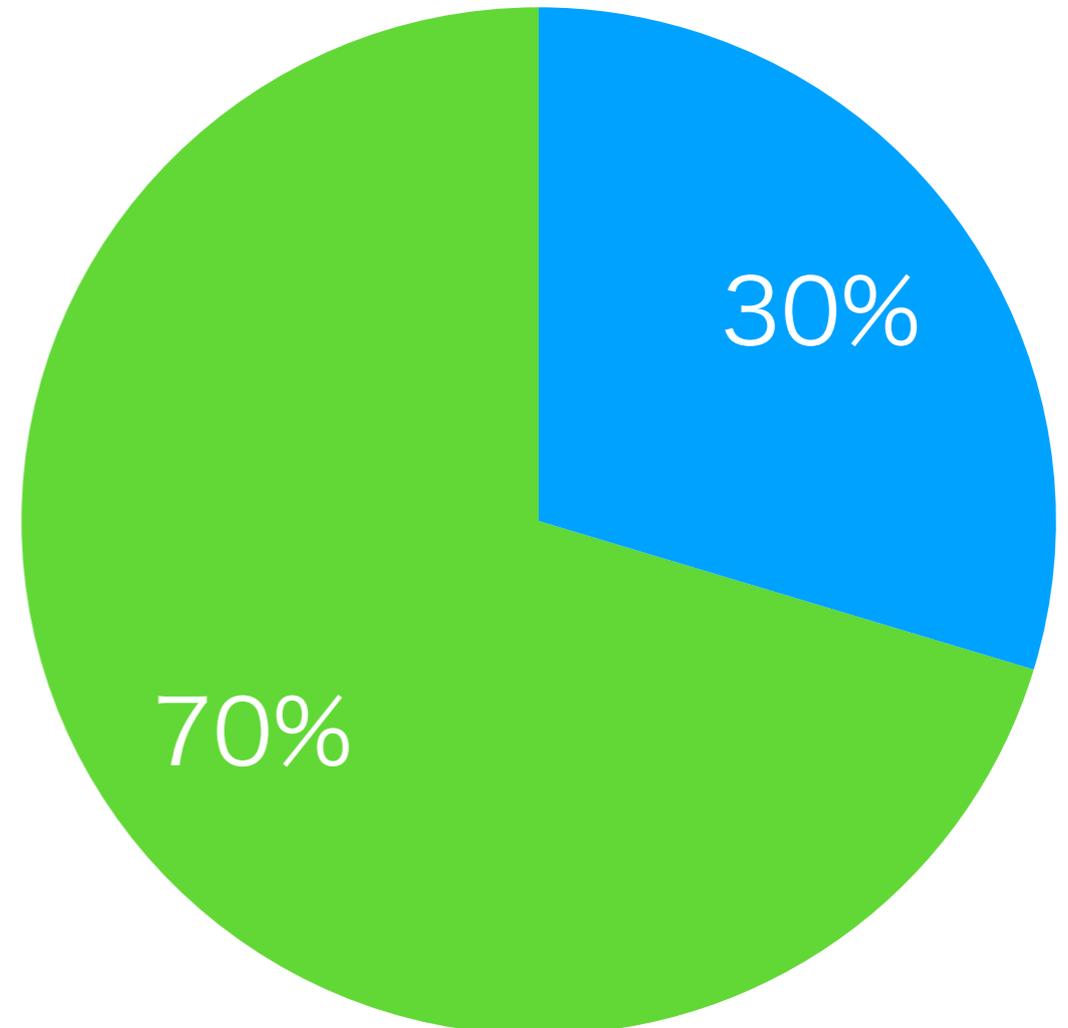
Results

● ≤14wks ● >15wks ● unkown



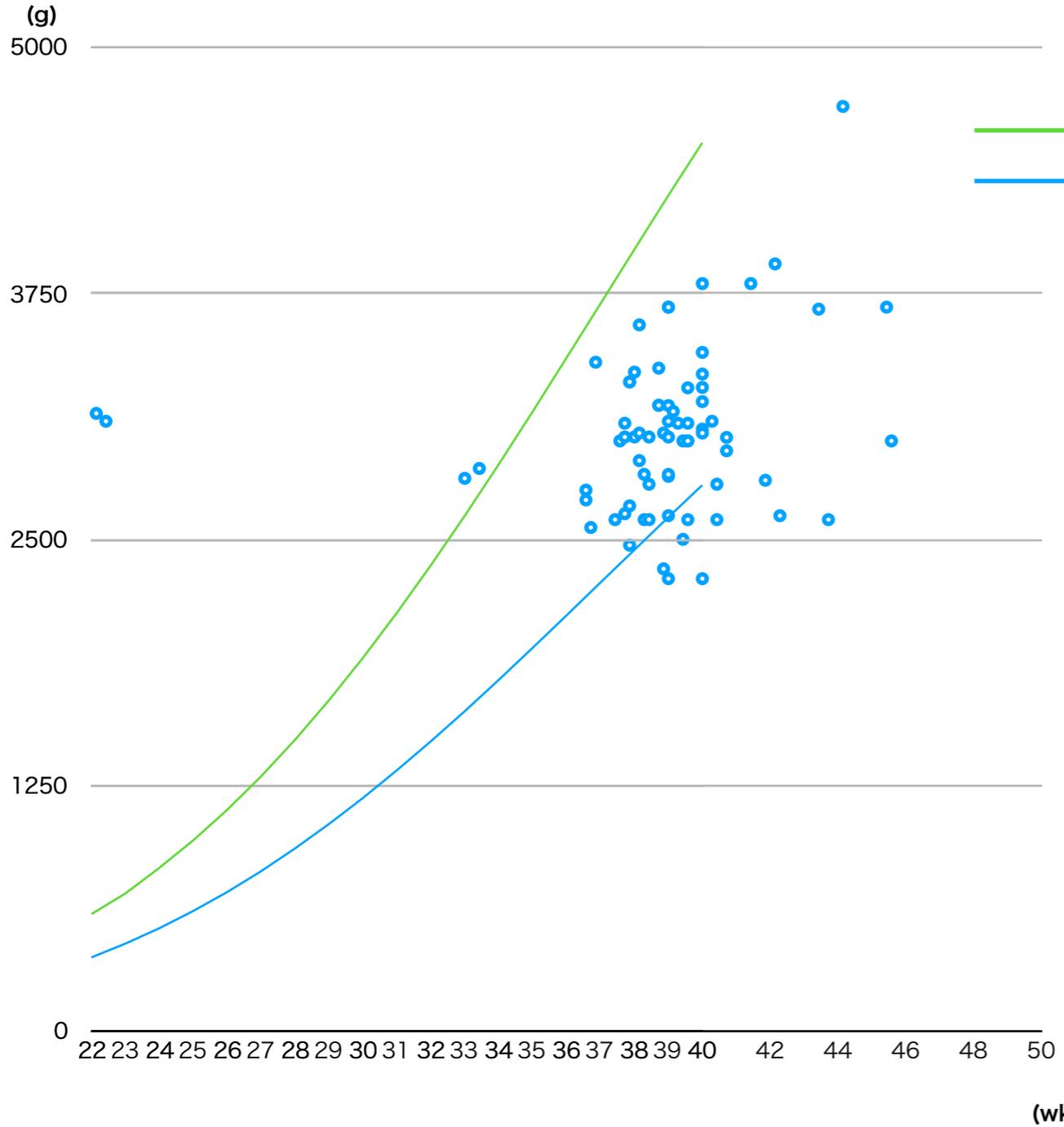
Gestational weeks at 1st antenatal contacts based on LMP and/or FH

● ≤28wks ● >29wks



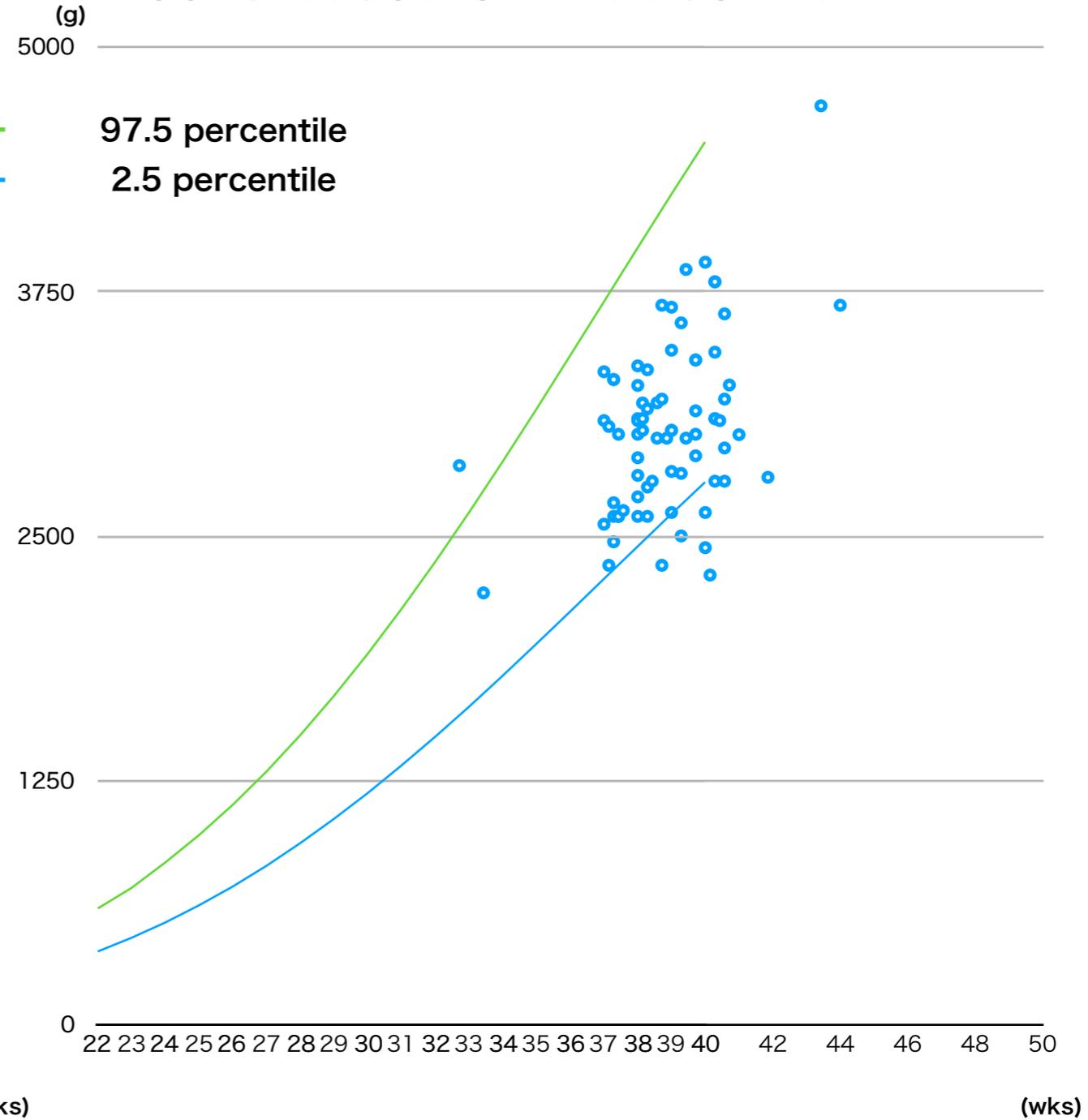
Gestational weeks at 1st ultrasound examination based on ultrasound

Birth weights and gestational weeks based on LMP or FH



Number of the compatible cases
n=58/91

Birth weights and gestational weeks based on ultrasound



Number of the compatible cases
n=81/91 (p<0.01)

Discussion

- Approximately half of pregnant women had attended 1st antenatal examination before 14 weeks of gestation.
- However, only 30% had received ultrasound examination before 28 weeks.
- Despite late contacts for the first ultrasound examinations, the number of the compatible cases was significantly greater when EDD was determined by ultrasound than by LMP or FH.
- Improved availability of ultrasound examination at first antenatal contact could result in more accurate estimation of EDD.
- Accurate estimation of GAs of preterm babies would greatly enhance health professions' capacity to plan more effective treatment strategies, thus reducing the mortality rates.

Conclusion

- In rural communities of Honduras, GA at birth could be more accurately estimated by a portable ultrasound device even in the late stages of pregnancy.