

## **ONLINE SUPPLEMENTARY DOCUMENT**

**Title:** Randomized comparison of two household survey modules for measuring stillbirths and neonatal deaths in five Health and Demographic Surveillance sites: Every Newborn-INDEPTH study

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With the Every Newborn-INDEPTH study Collaborative Group

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Appendix 1: Supplementary Tables and Figures

Table S0: CONSORT Checklist

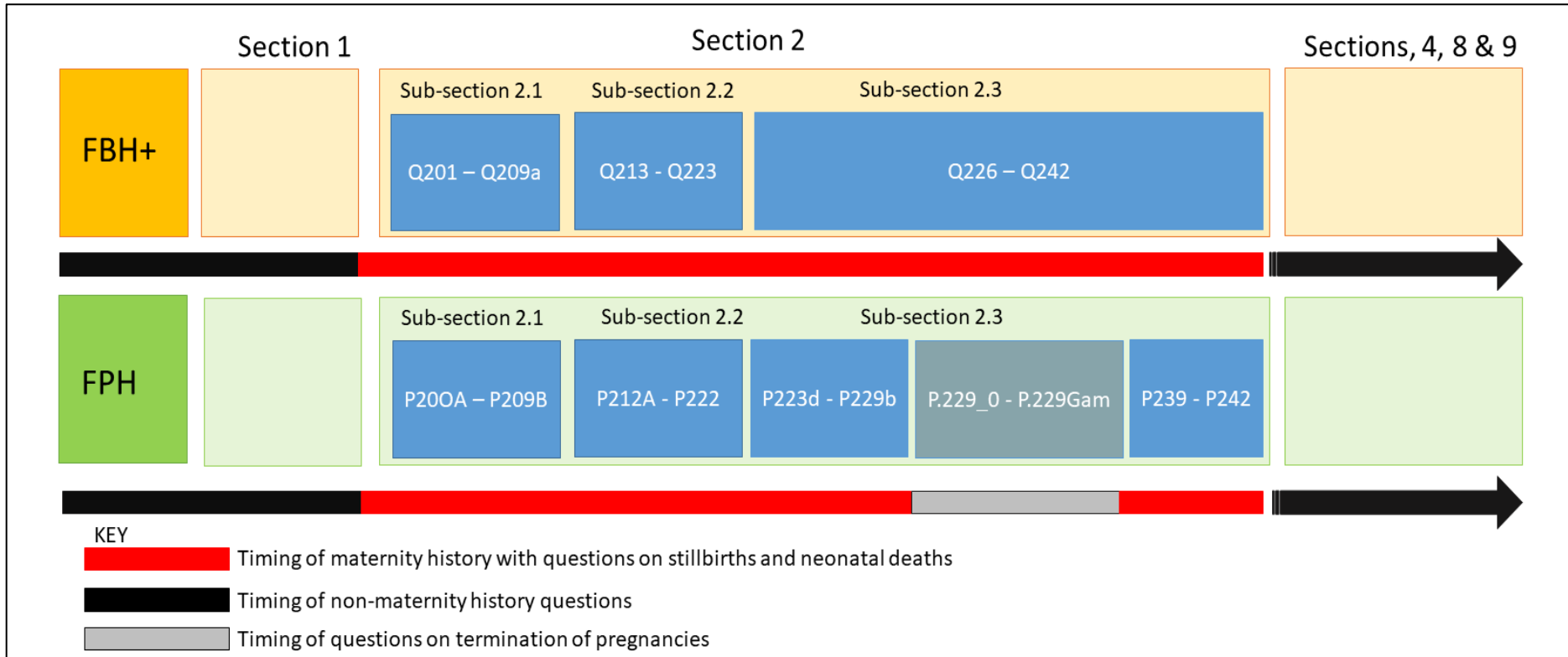
Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	2
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	4
	2b	Specific objectives or hypotheses	4
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	5
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	5,6
Participants	4a	Eligibility criteria for participants	4,5
	4b	Settings and locations where the data were collected	4
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	5
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	5
	6b	Any changes to trial outcomes after the trial commenced, with reasons	5
Sample size	7a	How sample size was determined	5
	7b	When applicable, explanation of any interim analyses and stopping guidelines	6
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	5
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	5
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	5
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	5

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Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	
	11b	If relevant, description of the similarity of interventions	
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	6
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	6
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	7
	13b	For each group, losses and exclusions after randomisation, together with reasons	7
Recruitment	14a	Dates defining the periods of recruitment and follow-up	
	14b	Why the trial ended or was stopped	
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	17
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	17
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	
Harms	19	All-important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	11
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	10-11
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	12
Other information			
Registration	23	Registration number and name of trial registry	6
Protocol	24	Where the full trial protocol can be accessed, if available	5
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	2

OVERVIEW OF TIMING CALCULATION

Figure S1: Visual impression of the timing of questions on stillbirths and neonatal deaths in the EN-INDEPTH survey



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WEALTH QUINTILES

For countries with previous DHS surveys (Bangladesh, Ethiopia, Ghana and Uganda), the variables used to derive the wealth quintiles were the same variables as those used in the DHS surveys with a few exceptions, while for Guinea-Bissau, the variables used were based on those used in Guinea-Bissau's Multiple Indicator Survey (MICS). The Table S2 shows the variables that were present in the country DHS/MICS principal components algorithm for obtaining the country wealth quintiles but missing in the EN-INDEPTH survey

Table S1: DHS/MICS versus EN-INDEPTH wealth quintiles matrix

UGANDA	GHANA	ETHIOPIA	BANGLADESH	GUINEA-BISSAU
DHS 2016	DHS 2014	DHS 2016	DHS 2014	MICS 2018
QH101_92 Source of drinking water: Sachet water	QH102_92 Source of drinking water: Sachet water	QH121G Table	QH110B Solar Electricity	HC8_Cart
QH121G Cassette/CD/DVD player	QH110B Wall clock	QH121H Chair	QH110H Almirah/wardrobe	HC8_Table
QH121H Table	QH110E Color television	QH121I Bed with cotton/spring mattress	QH110I Electric Fan	HC8_DVD/VCR
QH121I Chair	QH110J Electric generator/inventor	QH121J Electric mitad	QH110J DVD/VCD Player	HC8_Fan
QH121J Sofa set	QH110K Washing machine	QH121K Kerosene lamp/ pressure lamp	QH110K Water Pump	HC8_Air conditioning
QH121K Bed	QH110M Photo camera ( not on phone )	QH122H Bagag	QH110M Air Conditioner	HC9_Film camera
QH121L Cupboard	QH110N Video deck/DVD/VCD	QH143_13 Main roof material: Sod	QH110N Computer/Laptop	HC10_Rent dwelling
QH121M Clock	QH110O Sewing machine	LAND Owns land	QH116_31 Main wall material: Tin	HW2:: Observe presence of water at place for washing hands
QH122H Boat without a motor	QH110P Bed	memsleep Number of members per sleeping room	QH118B Autobike/tempo/CNG	HW3A: Observe soap, detergent or ash, mud, sand present for handwashing
QH142_36 Main floor material: Stones	QH110Q Table		QH118C Rickshaw/van	Domestic staff
QH142_37 Main floor material: Bricks	QH110R Cabinet/cupboard		DOMESTIC: Domestic staff	
QH143_13 Main roof material: Mud	QH110S Access to the Internet in any device		Memsleep: Number of members per sleeping room	
QH143_25 Main roof material: Tarpaulin	QH114_36 Main material of floor: Linoleum/rubber carpet			
QH143_33 Main roof material: Asbestos	QH115_37 Main roof material: Asbestos/slate roofing sheets			
QH144_12 Main wall material: Thatched/straw	QH118G Boat without a motor			
QH144_27 Main wall material: Unburnt bricks with plaster	HOUSE Owns a house			
QH144_28 Main wall material: Burnt bricks with mud	LAND Owns land			
DOMESTIC: Domestic staff	Memsleep: Number of members per sleeping room			
HOUSE Owns a house				
LAND_NONAG Owns non-agricultural land				

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Table S2: Definition of independent variables to be used in this analysis

	<b>Variable</b>	<b>Definition</b>	<b>Source</b>	<b>Scale</b>
<b>1</b>	<b>Survey module</b>	Survey module that the respondent was randomised to during the interview	Household survey	Categorical (Full Birth History, Full Pregnancy History)
<b>2</b>	<b>HDSS site</b>	Health and demographic surveillance site to which the woman belongs to	Household survey	Categorical (Bandim, Dabat, IgangaMayuge, Matlab and Kintampo)
<b>3</b>	<b>Age</b>	Age in years on the date of the survey	Household survey	Continuous and Categorical (15-19, 20-24, 25-29, 30-34, and 35+)
<b>4</b>	<b>Education level</b>	Level of education attained by respondent	Household survey	Categorical (No education, Primary only, primary & Secondary, Higher)
<b>5</b>	<b>Socioeconomic status</b>	Socioeconomic status or classification of respondent based on recorded household assets	Household survey	Categorical (Poorest, 2, 3, 4, Richest)
<b>6</b>	<b>Parity</b>	The number of times that a respondent has given birth to a foetus with a gestational age of 7 months or more, regardless of whether the child was born alive or was stillborn	Household survey	Categorical (0,1,2,3,4, 5+)
<b>7</b>	<b>Duration of stay in HDSS in years</b>	Duration of stay within the HDSS in years	Household survey	Categorical (<1year, 1-2 years, 2-4 years, 5+ years, Always, Visitor)
<b>8</b>	<b>Gender</b>	Interviewer's gender	Interviewer survey	Categorical (Male, Female)
<b>9</b>	<b>Age</b>	Interviewer's age in years	Interviewer survey	Continuous and Categorical (15-19, 20-24, 25-29, 30-34, and 35+)
<b>10</b>	<b>Marital status</b>	Marital status of interviewer	Interviewer survey	Categorical (Currently married, Living with a man/woman, Widowed, Divorced, Separated, Never Married)
<b>11</b>	<b>Education level</b>	Level of education attained by interviewer	Interviewer survey	Categorical (No education, Primary, Secondary, Higher)
<b>12</b>	<b>DHS experience</b>	Reported previous experience with DHS/MICS survey	Interviewer survey	Dichotomous (Yes, No)
<b>13</b>	<b>Non-DHS experience</b>	Reported previous experience with non-DHS/MICS survey	Interviewer survey	Dichotomous (Yes, No)

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Table S3: EN-INDEPTH study Ethical Approval of local Institutional Review Boards

HDSS site	Institutional Review Boards	Date	Number/Ref
Bandim	Comité Nacional de Ética na Saúde	12 June 2017	072/CNES/INASA/2017
Dabat	Institutional Review Board, University of Gondar	19 April 2017	VP/RCS/05/1074/2016
IgangaMayuge	Mildmay Uganda Research Ethics Committee	26 June 2017	REC REF 0305-2017
	Uganda National Council of Science and Technology	11 October 2017	SS 4244
Matlab	icddr,b Ethical Review Committee	19 July 2017	PR-17049
Kintampo	Kintampo Health Research Centre, Ghana Health service	14 June 2017	SRC/130617
	Ghana Health Services Ethics Review Committee	26 July 2017	GHS-ERC:19/06/14
	Kintampo Health Research Centre Institutional Ethics Committee	9 August 2017	KHRCIEC/2017-14
LSHTM	London School of Hygiene & Tropical Medicine	24 May 2017	12218

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Table S4: Background characteristics of interviewers participating in the EN-INDEPTH survey by HDSS site

Interviewer: characteristics	Bandim n=14	Dabat n=41	IgangaMayuge n=20	Kintampo n=22	Matlab n=20	Total n=117
<b>Gender</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Male	2 (14.3)	0 (0.0)	10 (50.0)	19 (86.4)	0 (0.0)	31 (26.5)
Female	12 (85.7)	41 (100.0)	10 (50.0)	3 (13.6)	20 (100.0)	86 (73.5)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Age – mean (SD)</b>	29.43 (8.9)	27.90 (6.7)	33.15 (5.3)	32.82 (6.1)	33.30 (9.2)	30.83 (7.5)
<b>Age</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<20	1 (7.1)	2 (4.9)	0 (0.0)	0 (0.0)	0 (0.0)	3 (2.7)
20 – 24	5 (35.7)	9 (22.0)	0 (0.0)	1 (4.6)	5 (25.0)	20 (17.1)
25 – 29	2 (14.3)	18 (43.9)	6 (30.0)	5 (22.7)	4 (20.0)	35 (29.9)
30 – 34	3 (21.4)	5 (12.2)	5 (25.0)	10 (45.5)	3 (15.0)	26 (22.2)
35+	3 (21.4)	7 (17.1)	9 (45.0)	6 (27.3)	8 (40.0)	33 (28.2)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Current marital status</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Currently married	3 (21.4)	33 (80.5)	12 (60.0)	6 (27.3)	0 (0.0)	54 (46.2)
Living with a man/woman	3 (21.4)	0 (0.0)	6 (30.0)	5 (22.7)	0 (0.0)	14 (12.0)
Widowed	1 (7.1)	0 (0.0)	0 (0.0)	2 (9.1)	0 (0.0)	3 (2.6)
Divorced	0 (0.0)	4 (9.8)	0 (0.0)	1 (4.6)	0 (0.0)	5 (4.3)
Separated	0 (0.0)	2 (4.9)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.7)
Never married	6 (42.9)	2 (4.9)	2 (10.0)	8 (36.4)	0 (0.0)	18 (15.4)
Missing	1 (7.1)	0 (0.0)	0 (0.0)	0 (0.0)	20 (100.0)	21 (17.9)
<b>Education level</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
No education	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Primary	0 (0.0)	7 (17.1)	0 (0.0)	0 (0.0)	0 (0.0)	7 (6.0)
Secondary	6 (42.9)	12 (29.3)	0 (0.0)	12 (54.6)	0 (0.0)	30 (25.6)
Higher	8 (57.1)	18 (43.9)	20 (100.0)	10 (45.5)	20 (100.0)	76 (65.0)
Missing/MICS	0 (0.0)	4 (9.8)	0 (0.0)	0 (0.0)	0 (0.0)	4 (3.4)
<b>Reported previous experience with DHS surveys</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	6 (42.9)	36 (87.8)	19 (95.0)	13 (59.1)	20 (100.0)	94 (80.3)
No	1 (5.0)	5 (12.2)	1 (5.0)	9 (40.9)	0 (0.0)	23 (19.7)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Previous experience with other non-DHS surveys</b>	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	7 (50.0)	17 (41.5)	16 (80.0)	16 (72.7)	14 (70.0)	70 (59.8)
No	7 (50.0)	24 (58.5)	4 (20.0)	6 (27.3)	6 (30.0)	47 (40.2)
Missing	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

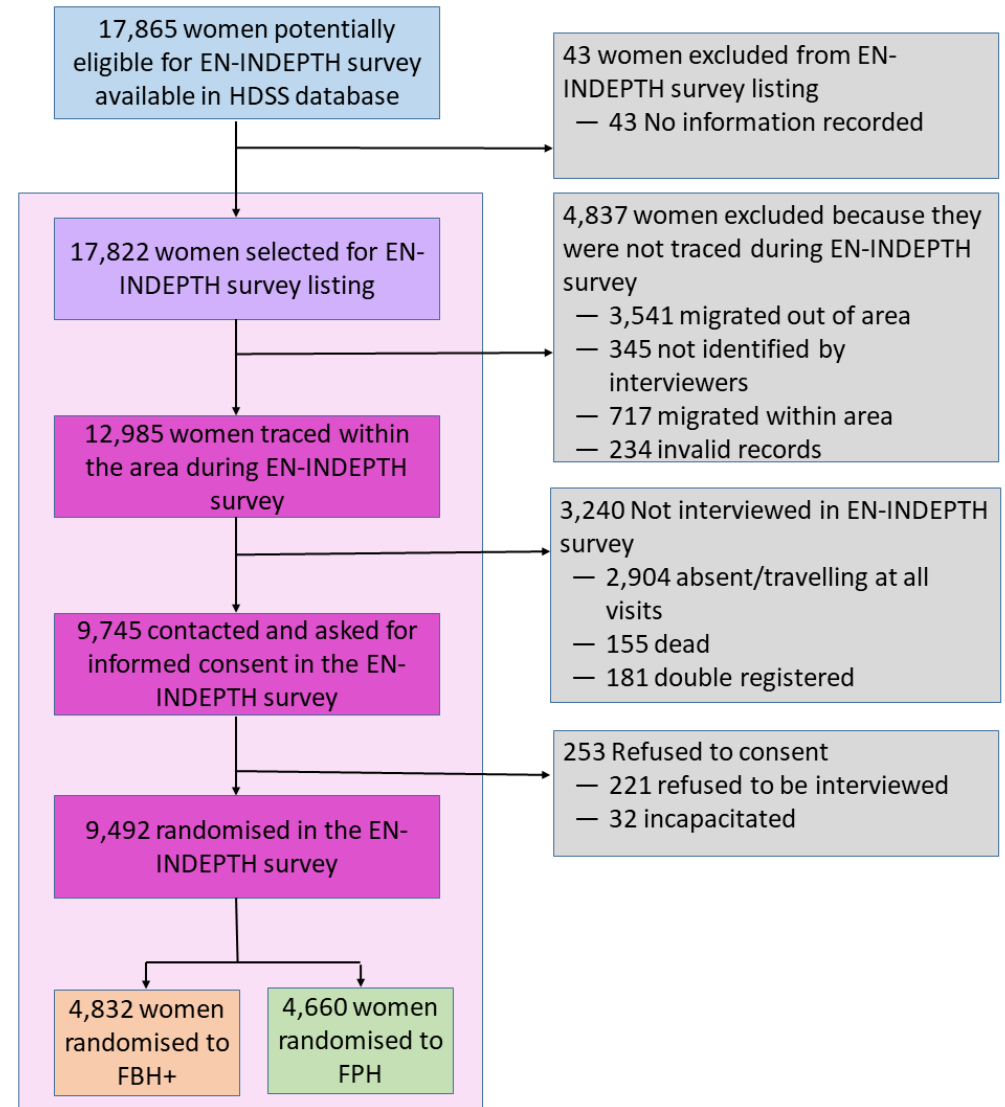
Figure S2: EN-INDEPTH Study flow diagram for each site

### A- HDSS specific flow figure key

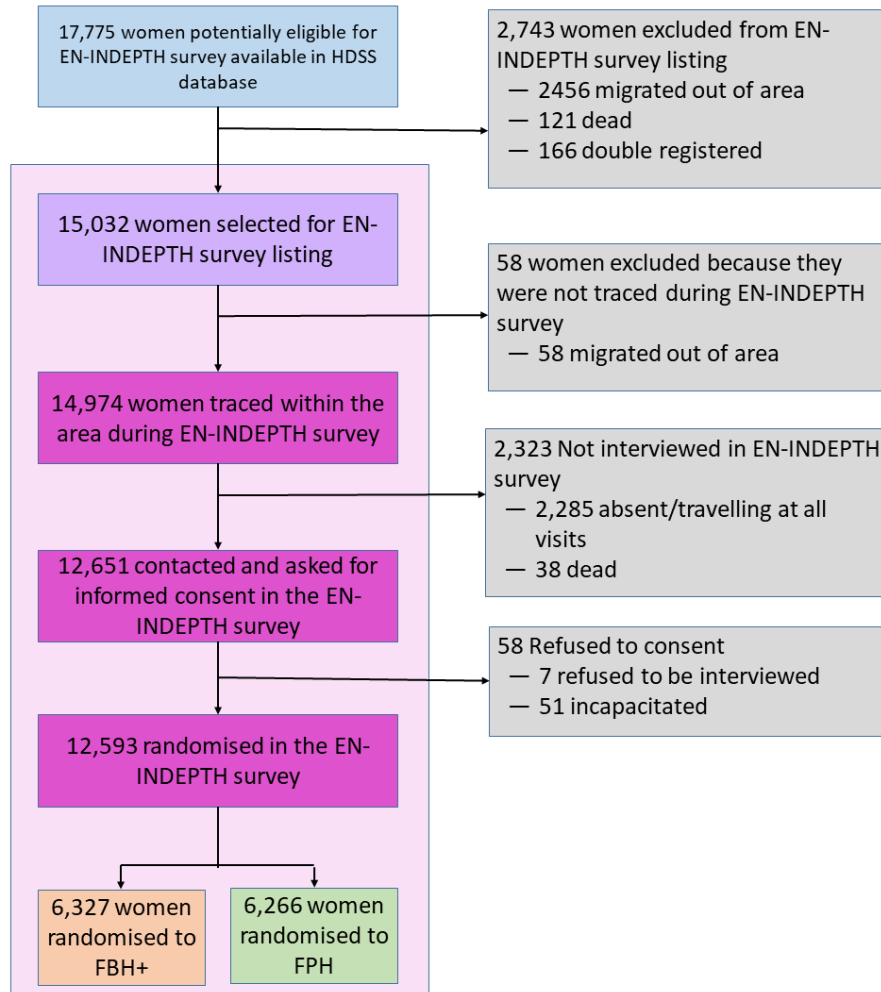
- The women in full HDSS dataset
- The women Excluded at all stages

- The women selected for the HDSS listing for the EN-INDEPTH survey.
- The women in the EN-INDEPTH survey women who were;
  - Traced within HDSS area
  - Contacted and asked for informed consent
  - Randomised
- The women randomised to the Full Birth History (FBH+)
- The women randomised to the Full Pregnancy History (FPH)

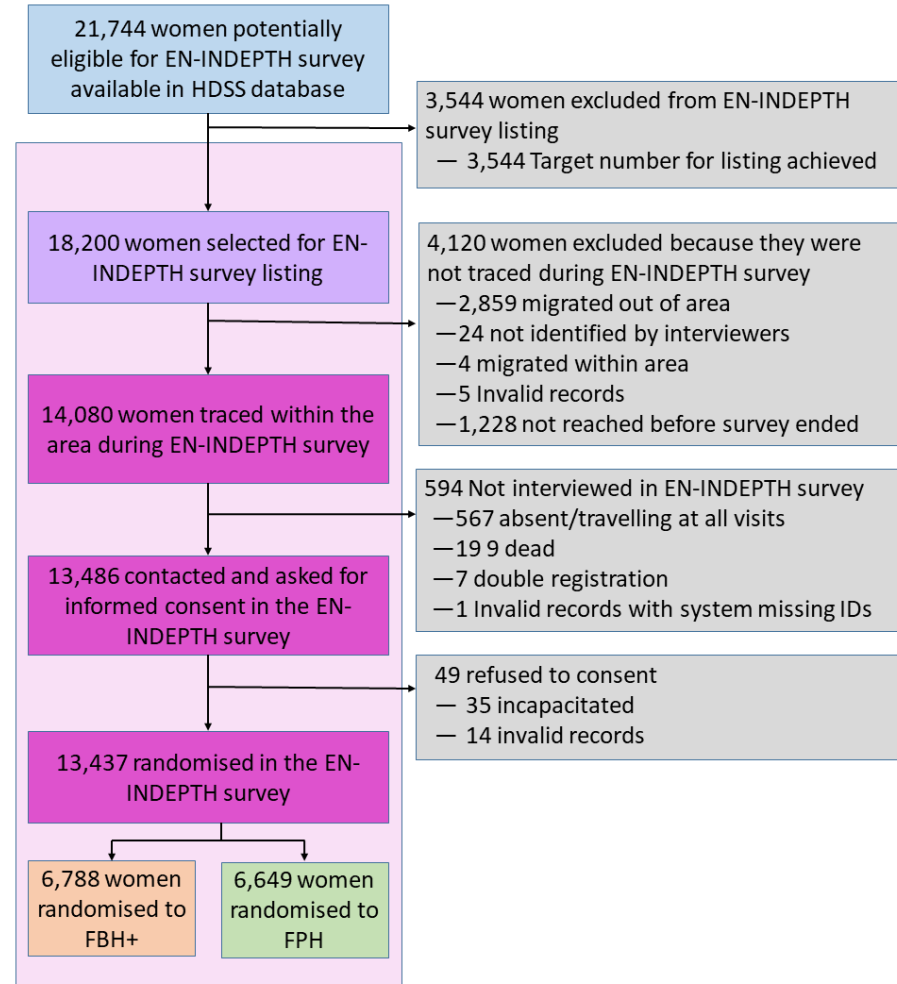
### B- BANDIM HDSS



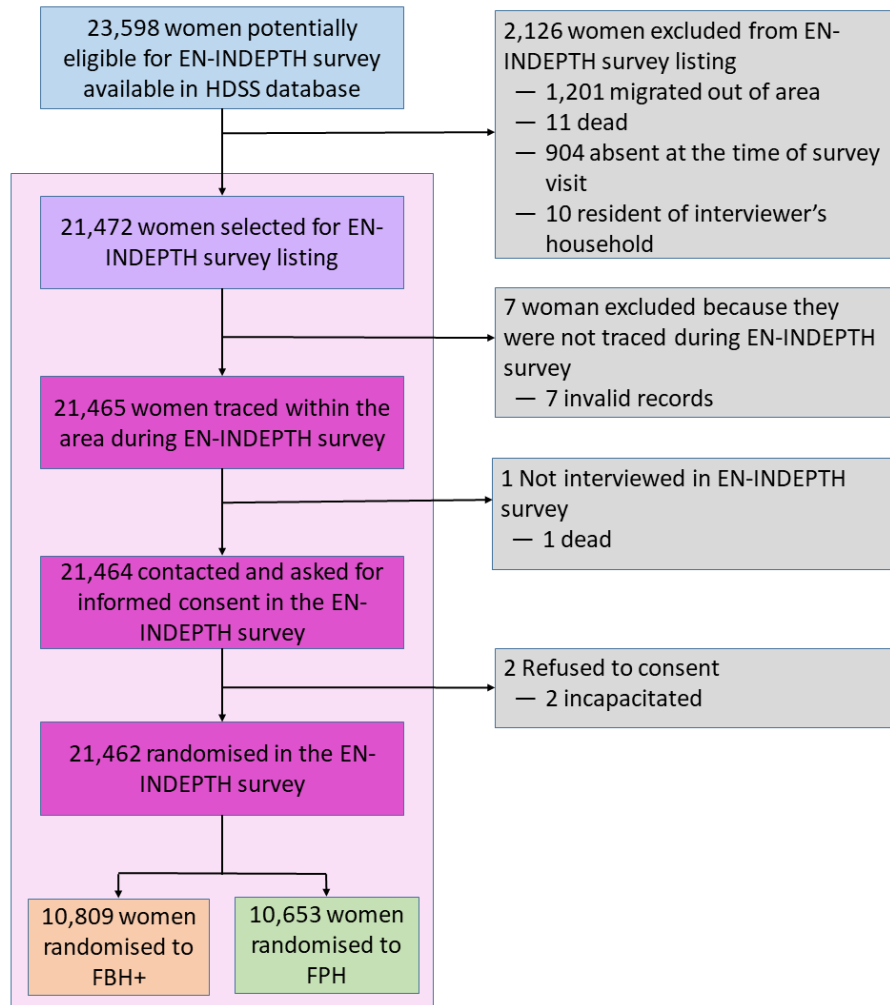
### C- DABAT HDSS



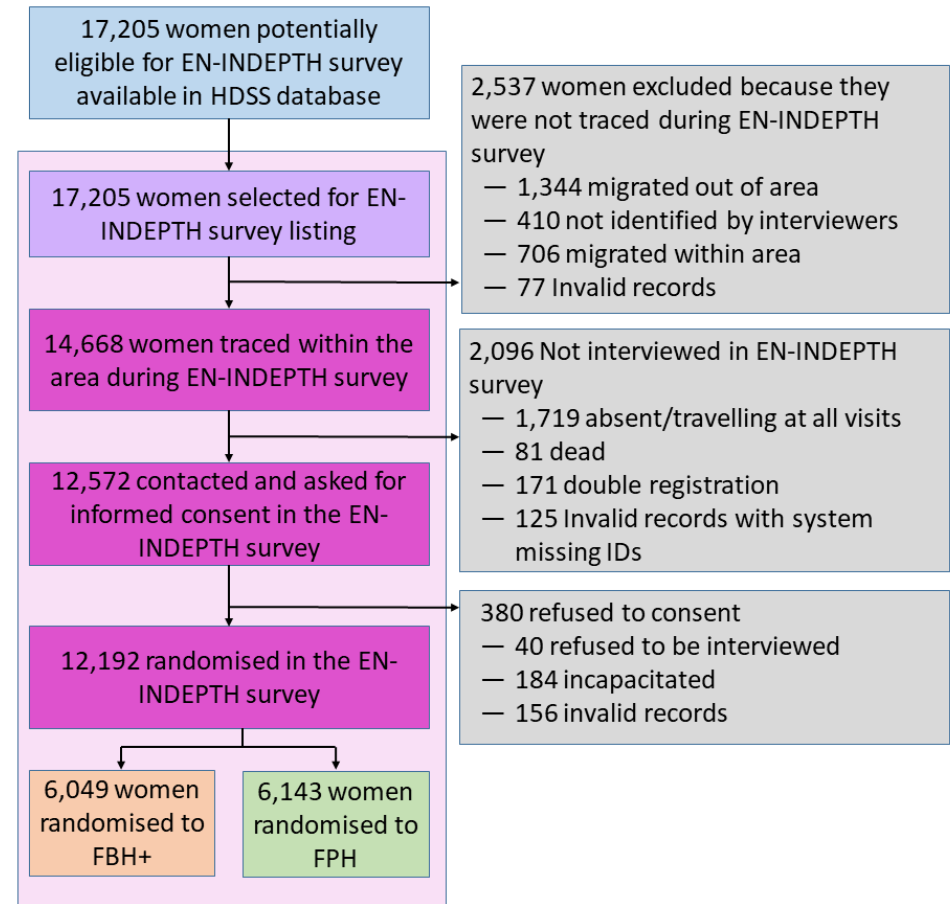
### D- IGANGAMAYUGE HDSS



### E- MATLAB HDSS



### F- KINTAMPO HDSS



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Table S5: Comparison of demographic characteristics of women included in survey versus women in survey listing not identified during the data collection period in IgangaMayuge HDSS

	Women included in survey	Women not reached before survey ended
Age years*	n(%)	(%)
15 – 19 (n=4147)	3883(93.6)	264(6.4)
20 – 24 (n=2995)	2676(89.3)	319(10.7)
25 – 29 (n=2015)	1777(88.2)	238(11.8)
30 – 34 (n=1606)	1434(89.3)	172(10.7)
35+ (n=3897)	3662(94.0)	235(6.0)
Missing	5(100.0)	0(0.0)
Duration of stay in HDSS in years**	n(%)	n(%)
<5 years (n=1871)	1579(81.5)	292(18.5)
5+ years (n=6889)	6310(91.6)	579(8.4)
Always (n=5901)	5544(94.0)	357(6.1)

\*Chi-Square test with 5 DF = 112.8; P<0.001

\*\* Chi-Square test with 2 DF = 255.2; P<0.001

The 1,228 (6.8%) women from IgangaMayuge who were selected for inclusion in the study but it was not possible to trace in the time available differed with regards to demographic characteristics from women in IgangaMayuge who were surveyed. It was not possible to trace 18.5% of women resident in HDSS for <5 years compared to fewer than 10% of those resident for 5 or more years. A slightly higher proportion of women aged 15 – 19 or over 35 were traced than women 20 – 34 years.

Table S6: Number of total births (Target versus EN-INDEPTH survey)

HDSS	Target number of total births n	Total number total births in survey n(%)
Bandim	17,000	12,282 (72.2)
Dabat	5,700	8,380 (147.0)
IgangaMayuge	9,800	8,622 (88.0)
Matlab	21,000	21319 (101.5)
Kintampo	14,500	16046 (110.7)
Total	68,000	66,649 (98.0)

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Figure S3: Distribution of number of stillbirths to each affected woman in the 5 years prior to the survey, by module and HDSS site

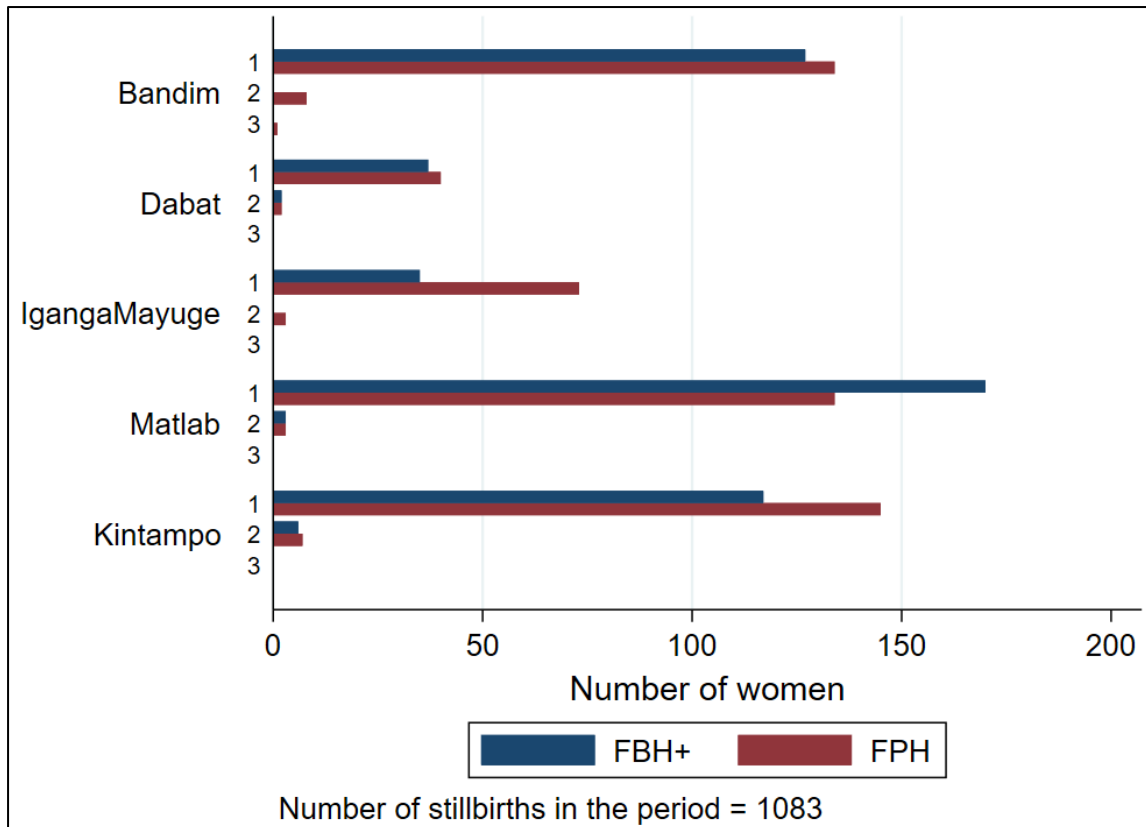
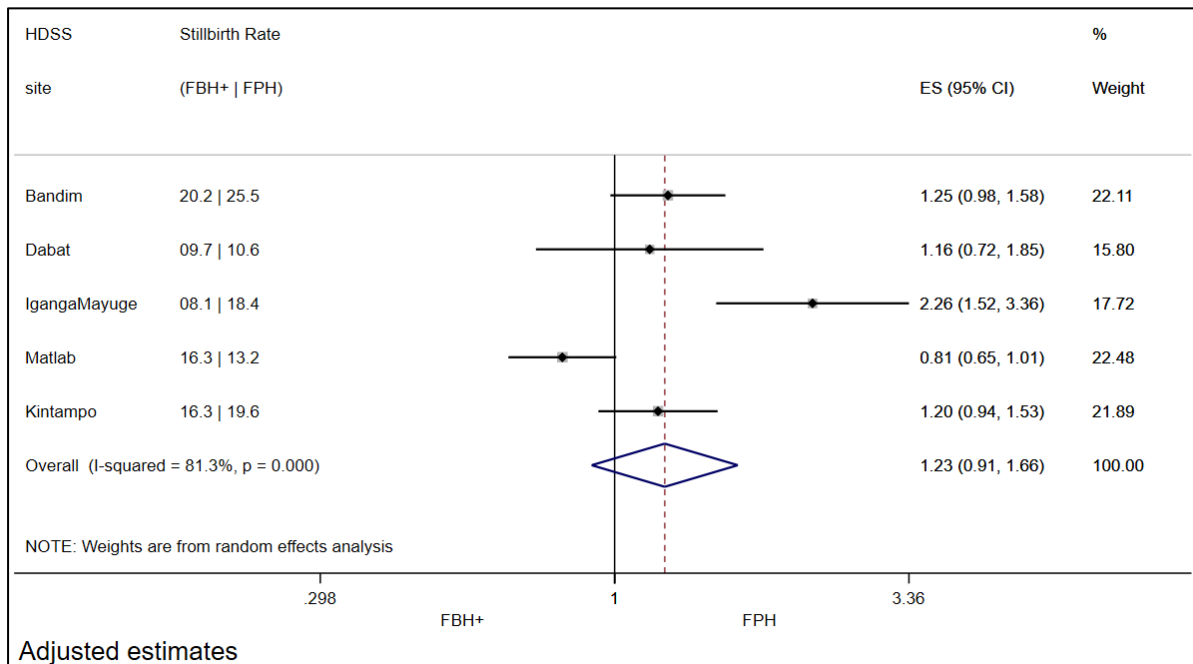


Figure S4: Forest plot showing the difference between maternity histories (overall and by HDSS site) for stillbirths adjusting for clustering of stillbirths with individual woman, woman and interviewer characteristics





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Figure S5: Distribution of number of neonatal deaths to each affected woman in the 5 years prior to the survey, by module and HDSS site

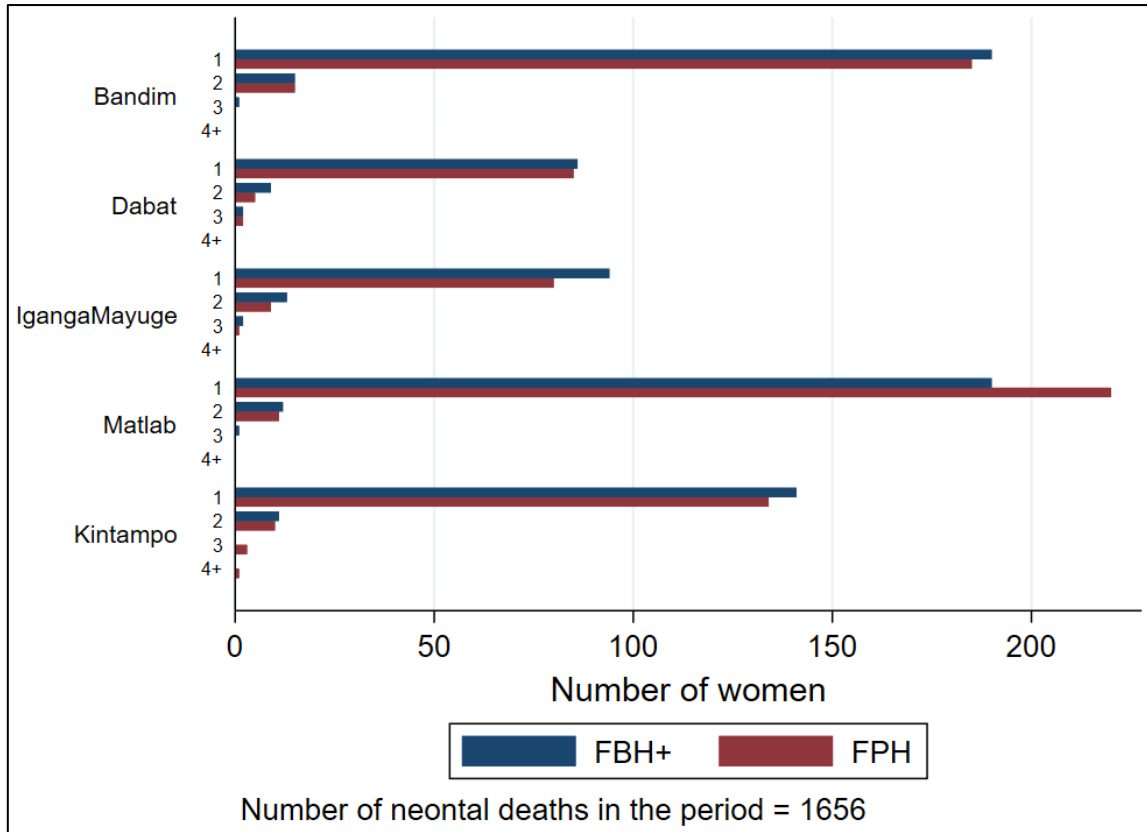
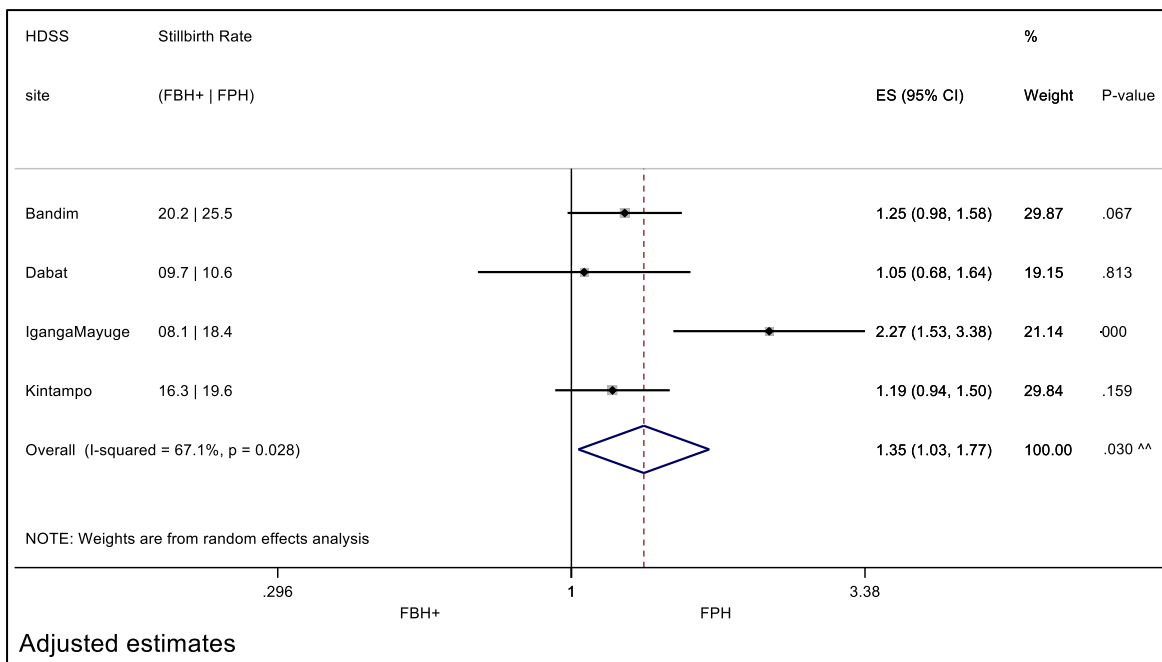


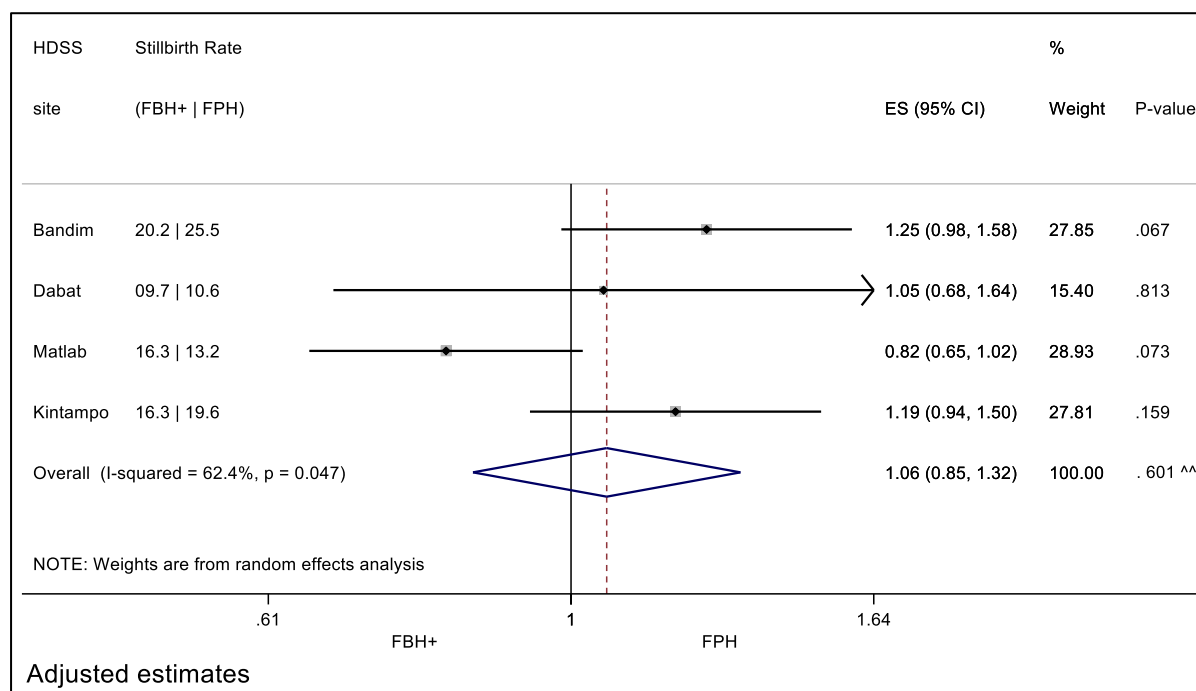
Figure S6a: Forest plot showing the difference between maternity histories (overall and by HDSS (excluding Matlab) for stillbirths adjusting for clustering of stillbirths within individual woman



^^ Pooled estimate P-value obtained from point estimate and 95% confidence interval

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Figure S6b: Forest plot showing the difference between maternity histories (overall and by HDSS (excluding Matlab) for stillbirths adjusting for clustering of stillbirths within individual woman



^^ Pooled estimate P-value obtained from point estimate and 95% confidence interval

TIME

Table S7: Analysis (adjusted) of mean response times for FBH+ and FPH adjusted by site and parity.

Characteristic	Mean time to completion	Adjusted coeff*	95% CI	P-value*
<b>Survey module</b>				
FBH+	0			
FPH	1:23		(1.11 – 1.36)	P=<0.001
<b>Parity</b>				
<4	0			
4+	12:01		(11.84 - 12.78)	P=<0.001
<b>HDSS</b>				
Bandim	0			
Dabat	-2:39		(-3.52 - -1.26)	P=<0.001
IgangaMayuge	0:91		(-2.18 - 0.35)	P=0.158
Matlab	2:01		(0.75 - 3.27)	P=0.002
Kintampo	0:35		(-0.87 - 1.61)	P=0.559

\*Mean time to complete a FPH module adjusting for all other characteristics

COMPARISON OF ESTIMATES FROM SURVEY WITH NATIONAL ESTIMATES

Table S8: Comparison of EN-INDEPTH survey estimates with National level estimates for Neonatal deaths

HDSS site	FBH+ Neonatal Mortality Rate/ 1000	FPH Neonatal Mortality Rate/ 1000	DHS/ MICS reported NMR (year)	UN-IGME estimated NMR (2017)
Bandim	36.2 (31.5 – 40.8)	36.8 (32.0 – 41.7)	36 (2014)	37.3 (24.3 – 54.9)
Dabat	26.4 (21.5 – 31.3)	24.5 (19.8 – 29.2)	29 (23 – 35) (2016)	28.9 (23.4 – 36.1)
IgangaMayuge	29.4 (24.3 – 34.4)	23.9 (19.3 – 28.6)	27 (24 – 30) (2016)	20.2 (15.6 – 25.9)
Matlab*	20.4 (17.8 – 23.2)	23.3 (20.4 – 26.2)	28 (24 – 33) (2014)	18.4 (16.2 – 20.8)
Kintampo	20.9 (17.8 – 24.1)	19.8 (16.8 – 22.9)	29 (23 – 34) (2014)	24.2 (19.1 – 30.7)

\*Matlab's NMR is much lower than national level due to icddr,b's MNCH-FP intervention in half of the HDSS area since 1978

Table S9: Comparison of EN-INDEPTH survey estimates with National level estimates for stillbirths

HDSS site	FBH+ Stillbirth Rate/ 1000	FPH Stillbirth Rate/ 1000	DHS Reported national SBR (year)	WHO estimated national SBR (2015)
Bandim	20.2 (16.7 – 23.6)	25.6 (21.5 – 29.5)	NA	36.7 (17.3 – 47.7)
Dabat	9.7 (6.7 – 12.7)	10.5 (7.5 – 13.7)	16.9 (2016)	29.7 (20.4 – 43.9)
IgangaMayuge	8.1 (5.4 – 10.8)	18.4 (14.3 – 22.4)	20.0 (2016)	21.0 (17.2 – 25.4)
Matlab*	16.3 (13.9 – 18.7)	13.3 (11.1 – 15.5)	25.7 (2014)	25.4 (22.0 – 28.9)
Kintampo	16.3 (13.5 – 19.1)	19.6 (16.6 – 22.6)	14.0 (2014)	22.7 (16.1 – 28.1)

\*Matlab's stillbirth rate is much lower than national level due to icddr,b's MNCH-FP intervention in half of the HDSS area since 1978. icddr,b's service helped increase ANC and facility delivery, which are preventive to stillbirth.

Table S10: SBR:NMR ratios in the EN-INDEPTH survey

HDSS site	FBH+ SBR:NMR	FPH SBR:NMR	Recent DHS national SBR:NMR
Bandim	0.6	0.7	NA
Dabat	0.4	0.4	0.5
IgangaMayuge	0.3	0.8	0.7
Matlab	0.8	0.6	0.8
Kintampo	0.8	1.0	0.5
Overall	0.6	0.7	NA

Table S11: Comparison of training of interviewers in the EN-INDEPTH survey by study site

	Bandim	Dabat	Iganga-Mayuge	Kintampo	Matlab
<b>Training</b>					
Pre-training self-study	No	No	Yes	No	No
Training with paper-based questionnaire	5 days	6 days	5 days	5 days	3 days
Training with Tester App	3 days	8 days	3 days	4 days	1.5 days
Piloting in the field <sup>1</sup>	11 days	7 days	2 days	1 days	2 days
Total training time	19 days	21 days	10 days	10 days	6.5 days
LSHTM team member participated in training	Yes	Yes	Yes	Yes	No <sup>2</sup>

<sup>1</sup> The Bandim site was the first site to implement the survey, and many issues raised during the pilot at the Bandim site were relevant for all sites.

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<sup>2</sup> The training in Matlab site was led by site team members.

PERINATAL DEATHS

Table S12: Randomised comparison of FBH+ versus FPH for perinatal deaths in last five years overall and by study site

HDSS site	Full Birth History		Full Pregnancy History	
	(perinatal deaths/ total births)	Perinatal Mortality Rate/ 1000 total births	(perinatal deaths/ total births)	Perinatal Mortality Rate/ 1000 total births
Bandim	319/6,291	50.7	340/5,991	56.8
Dabat	117/4,208	27.8	125/4,172	30.0
IgangaMayuge	139/4,324	32.2	167/4,298	38.9
Matlab	359/10,786	33.3	334/10,533	31.7
Kintampo	259/7,919	32.7	283/8,127	34.8
Overall	1,193/33,528	35.6	1,249/ 33,121	37.7

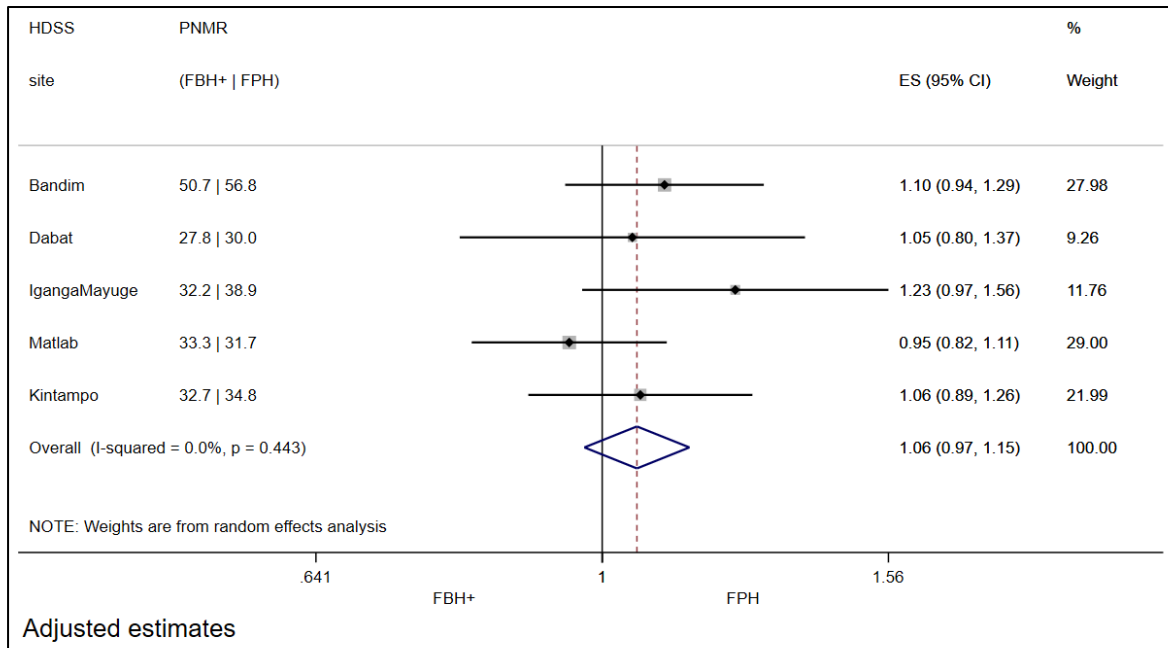
Overall, amongst births in the last 5 years, the crude perinatal mortality rate was 35.6 (33.6 – 39.8) per 1000 total births in the Birth History module compared to 37.7 (35.7 – 39.8) per 1000 total births in the FPH module. Across HDSS sites the crude perinatal mortality rate ranges from 27.8 per 1000 total births to 50.7 per 1000 total births in the birth history and from 30.0 per 1000 total births to 56.8 per 1000 total births in the Pregnancy history survey module (Table S12).

The Birth history module registered 1,193 perinatal deaths out of 33,528 total births that occurred within the last five years or sixty months before the day of the interview whereas the pregnancy history registered 1,249 perinatal deaths out of 33,121 total births that occurred within the last five or 60 months before the day of the interview. A higher perinatal mortality rate (PNMR) was recorded in the FPH in all sites except the Matlab HDSS (Table S12).

Overall, the perinatal mortality rate was similar in both the Pregnancy history and the Birth history. We found no evidence of heterogeneity between the HDSS sites with an I-squared at 0.0% and a very large p-value (p=0.443). This evidence was not statistically significant.

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Figure S7: Forest plot showing the difference between maternity histories (overall and by HDSS) for perinatal mortality adjusting for clustering of perinatal deaths with individual women



Appendix 2 – EN-INDEPTH survey questionnaire (IN SEPARATE DOCUMENT (EXCEL FILE))

EN-INDEPTH survey questionnaire was adapted from sections 1, 2, 4, 8 of the DHS-7 model women's questionnaire, and information on household socio-economic status from the DHS-7 model household questionnaire.

Section 1: included respondent background characteristics using a shortened version of the standard DHS-7 questionnaire.

Section 2: included a retrospective inquiry about all livebirths and pregnancy losses in either a FBH+ or FPH module. In Sub-section 2.1, women were asked to state their lifetime total number of liveborn children (FBH+ and FPH) and total number of pregnancy losses (FPH only). In Sub-section 2.2, women were asked details about lifetime livebirths (FBH+) and lifetime pregnancies (FPH). In Sub-section 2.3, women were asked about all pregnancy losses that occurred during the last five years (FBH+), questions about pregnancy termination (FPH), and questions about pregnancy intendedness for currently pregnant women and also about menstruation (FPH & FBH+).

Finally, Sections 4, 8 and 9, included questions on household characteristics for all respondents and additional detailed questions on pregnancy and postnatal care and fertility preferences for a subset of women. The results of the detailed questions are not presented in this paper.

**Appendix 3 - Century Month Code (CMC) COMPUTATION**

The CMC is obtained by taking the difference between year of event and 1900, multiplied by 12 and adding the month in which the event occurred.