

Birth data accessibility via primary care health records to classify health status in a multi-ethnic population of children: an observational study

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Supplementary Information

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Table S1: Distribution of socio-economic circumstances according to GPs response to request for information.

	Total GPs contacted	Missing GP responses [†]	P	Total GPs respond	Missing GP birth data [‡]	P
	N	% (95% CI)		N	% (95% CI)	
GP's IMD domain			<0.0001			<0.0001
<i>1st quintile (least deprived)</i>	23	26 (8; 44)		17	18 (0; 36)	
<i>2nd quintile</i>	397	25 (21; 29)		298	41 (35; 46)	
<i>3rd quintile</i>	143	47 (39; 55)		76	58 (47; 69)	
<i>4th quintile</i>	511	41 (36; 45)		304	57 (51; 62)	
<i>5th quintile (most deprived)</i>	663	31 (27; 34)		459	73 (69; 77)	
Family's IMD income			<0.0001			<0.0001
<i>1st quintile (least deprived)</i>	83	11 (4; 18)		74	34 (23; 45)	
<i>2nd quintile</i>	169	37 (29; 44)		107	43 (34; 52)	
<i>3rd quintile</i>	204	28 (22; 35)		146	38 (30; 46)	
<i>4th quintile</i>	578	35 (31; 39)		374	62 (57; 67)	
<i>5th quintile (most deprived)</i>	747	33 (30; 37)		499	73 (69; 76)	
Number of computers (incl. laptops etc)/ household			0.29			<0.0001
> 2	435	33 (29; 38)		291	49 (44; 55)	
2	592	33 (29; 36)		399	58 (54; 63)	
1	626	31 (28; 35)		430	67 (62; 71)	
0	27	41 (22; 59)		16	69 (46; 91)	
Number of vehicles/ household			<0.0001			<0.0001
≥ 2	416	29 (25; 33)		295	43 (37; 48)	
1	882	33 (30; 36)		588	60 (56; 64)	
0	385	34 (29; 38)		256	77 (71; 82)	
Child's own bedroom			0.02			<0.0001
Yes	911	30 (27; 33)		639	55 (51; 59)	
No	776	35 (32; 38)		505	66 (62; 70)	

[†]No feedback was received from GPs for 583/1785 (33%) children for whom there was parental consent to access records.

[‡]GPs who did respond could not provide any data on BW or GA for 720/1202 (60%) children (see *Figure 1*). P-values derived through chi-square test to evaluate factors associated with a) GP's non-response and b) lack of birth data.

Table S2: Factors associated with the likelihood of parental misclassification[†] of child's gestational age.

Univariable multinomial regression models [†]	Underestimation (n=18) [‡]		Overestimation (n=10) [‡]	
	OR (95% CI)	P	OR (95% CI)	P
Child's Age (per year)	1.09 (0.73; 1.63)	0.68	1.06 (0.79; 1.44)	0.69
Sex (baseline: girls)				
<i>Boys</i>	1.08 (0.31; 3.80)	0.90	0.87 (0.33; 2.24)	0.77
Ethnicity (baseline: white)				
<i>Black-African origin</i>	2.68 (0.58; 12)	0.21	2.55 (0.78; 8.35)	0.12
<i>South Asian</i>	0.47 (0.05; 4.24)	0.50	0.80 (0.20; 3.17)	0.75
<i>Other</i>	2.63 (0.46; 15)	0.28	2.25 (0.56; 9.11)	0.26
Born in UK (baseline: Yes)				
<i>No</i>	2.06 (0.25; 17)	0.72	1.42 (0.18; 11)	0.74
Dominant language in family (baseline: English)				
<i>Other</i>	0.61 (0.07; 4.95)	0.64	1.64 (0.43; 6.28)	0.47
Family's IMD domain (baseline: 1st & 2nd quintile (least deprived)) [‡]				
<i>3rd quintile</i>	1.04 (0.17; 6.37)	0.97	0.26 (0.03; 2.20)	0.22
<i>4th quintile</i>	0.35 (0.04; 3.15)	0.35	0.93 (0.25; 3.38)	0.91
<i>5th quintile (most deprived)</i>	2.52 (0.58; 11)	0.22	1.76 (0.57; 5.41)	0.33
FAS (baseline: High 5-6) [‡]				
<i>Moderate (2-4)</i>	1.09 (0.26; 4.64)	0.91	1.64 (0.50; 5.32)	0.41
<i>Low (0-1)</i>	2.32 (0.24; 22)	0.84	4.93 (0.83; 29)	0.08

Abbreviations: OR: Odds ratio, GP: General Practitioner; IMD = Index of multiple deprivation; FAS = Family affluent score.

[†]For the purpose of this analysis, parental misclassification was defined as a difference in child's GA of more than 2 weeks compared with the GP records. As discussed in the main MS, this presumption was not necessarily always correct, and it is possible that in the presence of transcription errors by the GP, the degree of parental 'misclassification' was even smaller than presented here. [‡]Modelling was based on 407 cases for which paired data were available. [‡]The middle category (i.e. those neither under nor over estimated by PQ) was used as the baseline against which the other two were compared.

[‡]The 1st and 2nd quintile of IMD were grouped together due to the small sample size in the 1st quintile. [‡]FAS was grouped in three categories due to the small sample size in the lower scores.

Table S3: Classification of children's birth status using parental questionnaire or general practitioner's records.

Paired information regarding:

a) Birthweight (n=376)

		GP	
		LBW	Normal BW
PQ	LBW	4.8% (18/376)	2.9% (11/376)
	Normal	1.6% (6/376)	90.7% (341/376)

Kappa (95% CI)=0.66 (0.50; 0.81), p<0.001

b) Gestational Age (n=407)

		GP	
		Preterm	Fullterm
PQ	Preterm	7.6% (31/407)	1.0% (4/407)
	Fullterm	2.0% (8/407)	89.4% (364/407)

Kappa=0.82 (0.72; 0.92), p<0.001

c) Both sources (n=322)

	Birth info classification from GP			Total
	Normal BW & GA	low BW or preterm	low BW & preterm	
Birth info classification from PQ				
Normal BW & GA	282	9	0	291
low BW or preterm	10	7	1	18
low BW & preterm	1	2	10	13
Total	293	18	11	322

Kappa=0.59 (0.44; 0.74), p<0.001

Abbreviations: BW: Birth weight, GA: Gestational age, PQ: Parental questionnaire, GP: General Practitioner of primary care, LBW: low birthweight.

Critical cut-offs of <2.5 kg and <37 weeks were used to categorise children born low birthweight or preterm respectively. Of the 376 children with paired information on BW 1.6% children were misclassified as normal BW according to PQ records while classified as LBW using GPs and 2.9% were misclassified as LBW using the PQ records while classified as normal BW by GPs (Table S3a)). Of the 407 children with paired information on GA, 2.0% were misclassified as normal GA using the PQ records while classified as preterm using GP data and 1.0% were misclassified as preterm using the PQ records while classified as normal GA using GP data (Table S3b)). On further data exploration, based on the paired birth data available, 9/291 (3%) would have been classified as normal BW by PQ but of LBW/preterm by the GP, while 11/293 (3.7%) were classified as LBW or preterm by PQ while classified as normal by GP. Due to this low mis-classification rate we still feel that parental recall is an appropriate alternative (Table S3c)).