Calculation of C-section coverage based on maternal report

We estimated C-section coverage using household survey data on C-section births. Ideally, an estimated 10-15% of births should occur via medically-necessary C-sections (1). In some countries, and particularly in higher-income groups, non-medically necessary elective C-sections may be common. To estimate the proportion of women in need of a C-section who accessed the service, we attempted to adjust for the contribution of elective C-sections in the overall C-section delivery rate. By removing the excess unnecessary C-sections, we can better ascertain the gap in C-section coverage for the population.

Using maternal report of C-section birth from household surveys, we estimated the proportion of women within each wealth quintile accessing C-section, assuming 12.5% of births required C-section. We capped coverage within a wealth quintile at 100%. We then weighted the quintile-specific coverage by the proportion of births within the wealth quintile, based on either CBR or TFR, to adjust for the proportion of births occurring at the calculated C-section coverage level. Finally, we sum the weighted C-section coverage by wealth quintile to calculate C-section coverage in the total population.

Example calculation:

Wealth quintile (WQ)	C-section rate by WQ	C-section coverage by WQ	TFR	TFR weight	Weighted coverage	
1	1.4	0.112	5	0.235	0.026	
2	1.8	0.144	4.4	0.207	0.030	
3	2.9	0.232	4.5	0.211	0.049	
4	2.5	0.2	4.2	0.197	0.039	
5	6.7	0.536	3.2	0.150	0.081	
					0.225	Weighted coverage

$$C\ section\ coverage\ in\ WQ = \frac{Csection\ rate_i}{Assumed\ need\ (12.5)}$$

$$C\ section\ coverage\ in\ WQ1 = \frac{1.4}{12.5} = 0.112$$

$$TFR \text{ } weight \text{ } in \text{ } WQ = \frac{TFR_i}{\mu_{TFR}} * \frac{1}{\sum_{i=1}^{5} \frac{TFR_i}{\mu_{TFR}}} = \frac{TFR_i}{\sum_{i=1}^{5} TFR}$$

$$TFR \text{ } weight \text{ } in \text{ } WQ1 = \frac{5}{21.3} = 0.235$$

$$Weighted \text{ } coverage = \sum_{i=1}^{5} TFR \text{ } weight_i * C \text{ } section \text{ } coverage_i$$

1. WHO, HRP. WHO statement on caesarean section rates [Internet]. Geneva, Switzerland: WHO; 2015 [cited 2020 Nov 17]. Available from: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/cs-statement/en/