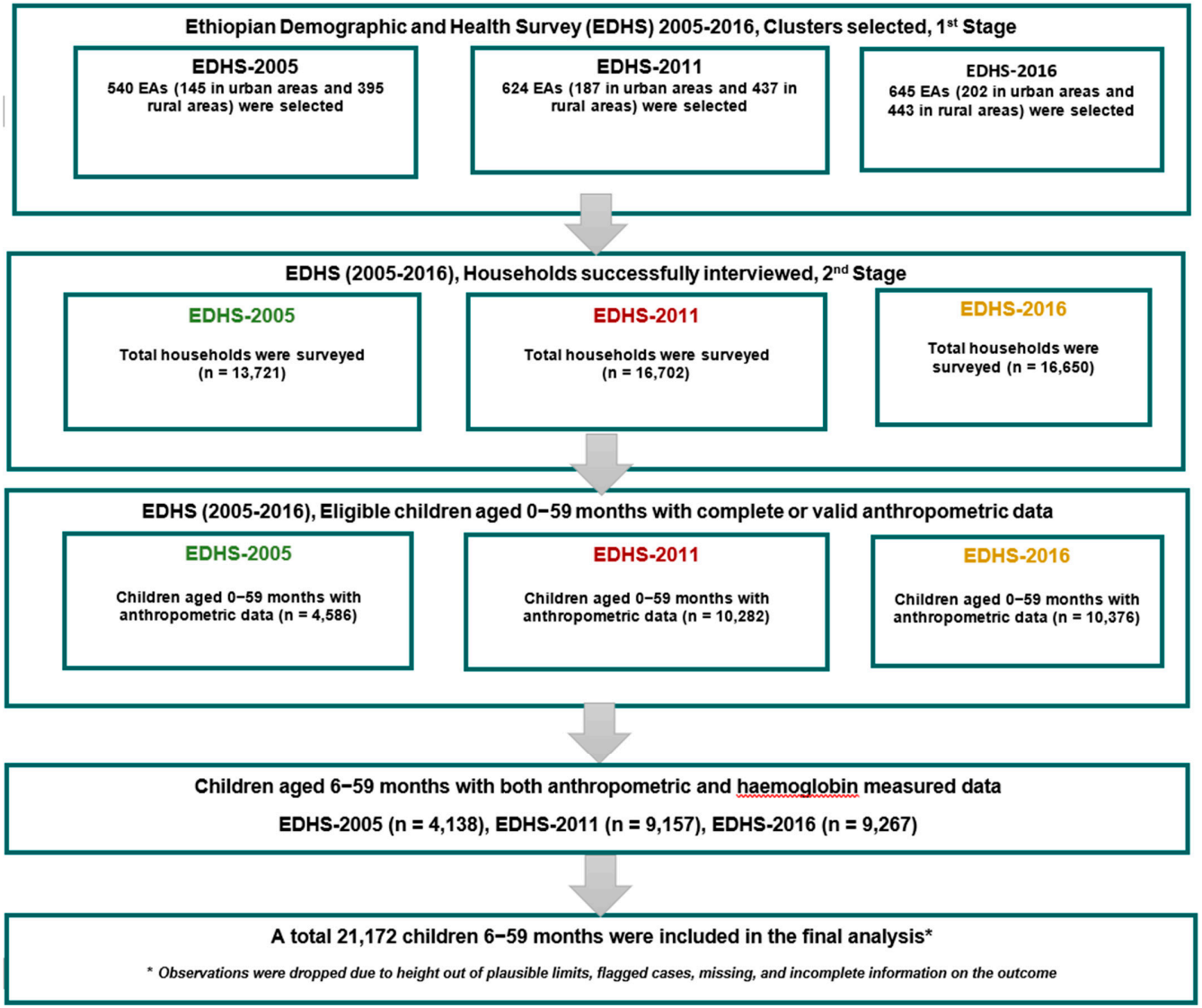
**Supplementary File S1:** The flowchart for the sampling and data extraction procedure, Ethiopian Demographic and Health Survey (EDHS), 2005-2016



**Supplementary File S2:** A detailed list and variable coding of independent variables

| Lists of Variables | Categories | Descriptions |
|---|---|---|
| **Individual level factors** | | |
| ***Child factors*** | | |
| Sex | 1): Male, 2): Female | |
| Age of child (months) | 1): 6-11, 2): 12-23, 3): 24-35, 4): 36-59 | |
| Birth order | 1): First born, 2): 2-4, 3): 5 or higher | |
| Birth interval | 1): < 33 months, 2): ≥33 months | |
| Perceived size of child at birth | 1): Larger , 2): Average, 3): Small | Assessed by the subjective reporting of the mother about the size of the child at birth and categorized as large, average and small. Birth size was used as a proxy measure of birth weight. |
| Currently breastfeeding | 1): Yes, 2): No | |
| Received measles | 1): Yes, 2): No | |
| Full vaccination | 1): Yes, 2): No | "Yes" if the child received a Bacillus Calmette–Guérin (BCG) vaccination against tuberculosis; 3 doses of Diptheria, pertussis, and tetanus vaccine (DPT); ≥3 doses of polio vaccine (OPV); and 1 dose of measles vaccine; no otherwise. |
| Child had diarrhea in last 2 weeks | 1): Yes, 2): No | |
| Child had fever in last 2 weeks | 1): Yes, 2): No | |
| Child receive iron supplement | 1): Yes, 2): No | Assessed by whether the child received iron supplement within the previous 7 days. |
| Received deworming medication in the last 6 month | 1): Yes, 2): No | Assessed by whether the child received deworming table within the previous 6 months. |
| ***Parental factors*** | | |
| Mother's age (years) | 1): <18, 2): 18-24, 3): 25-34, 4): 35-49 years | |
| Mother's education status | 1): No education, 2): Primary, 3): Secondary 4): Higher | |
| Mother's occupation | 1): Not working, 2): Non agriculture, 3): Agriculture | |
| ANC Visit | 1): None, 2): 1-3, 3): 4-7, 4): 8+ | |

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| Maternal BMI (kg/m$^2$) | 1): <18.5 (underweight), 2): 18.5 to 24.9 (normal), 3): 25 + | |
| Maternal anemia | 1): Yes, 2): No | |
| Maternal stature | 1): Very short (<145 cm), 2): Short (145 to <155 cm), 3): Normal/Tall (155 to <200 cm) | |
| Listening to radio | 1): Not at all, 2): Yes | |
| Watching television | 1): Not at all, 2): Yes | |
| ***Household factors*** | | |
| Household wealth category | 1): Poor, 2): Middle, 3): Rich | The household wealth index was calculated based on household assets, such as televisions and bicycles. Principal components analysis was applied to generate the wealth index as a continuous scale of relative wealth. The wealth index was categorized into five wealth quintiles: 'very poor', 'poor', 'middle', 'rich' and 'very rich. For this analysis, we re-coded the wealth index into three categories for adequate sampling in each category: 'poor' (poor and very poor), 'middle' and 'rich' (rich and very rich). |
| Household Size | 1): 1-4, 2): ≥ 5 | |
| Place of cooking | 1): In the house, 2): In separate building, 3): Outdoors | |
| Type of cooking fuel | 1): Clean fuels, 2): Solid fuels | The type of cooking fuel were considered to be solid fuels if it is coal/lignite, charcoal, wood, straw/shrub/grass, crops, and animal dung. Categories such as electricity, liquefied petroleum gas (LPG), natural gas, and biogas were combined and coded as “no solid/ clean fuel use”. |
| Toilet facility | 1): Improved , 2): Unimproved, 3: Open defecation | Based on the WHO definition, facilities would be considered improved if any of the following occured: flush/pour flush toilets to piped sewer systems, septic tanks, and pit latrines; ventilated improved pit (VIP) latrines; pit latrines with slabs; and composting toilets. Unimproved sanitation included: flush or pour-flush to elsewhere; pit latrine without a slab or open pit; bucket, hanging toilet or hanging latrine. Other facilities, |

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| | | including households with no facility or use of bush/field, were considered as open defecation. |
| Source of drinking water | 1): Improved , 2): Unimproved, | Improved sources of drinking water included piped water, public taps, standpipes, tube wells, boreholes, protected dug wells and springs, and rainwater. Other sources of drinking water were regarded as unimproved. |
| Household flooring | 1): Improved , 2): Unimproved, | Household floors were considered to be unimproved if it is natural floors (earth/sand, dung), whereas rudimentary floors (wood planks, palm/bamboo), and finished floors (parquet or polished wood, vinyl or asphalt strips/plastic tile, ceramic tiles, cement, carpet) were considered as improved. |
| Time to get a water source | 1): On premise, 2): ≤ 30 min, 3): 31-60 min, 4): >60 min | |
| ***Community Level Factors*** | | |
| Residence | 1): Urban, 2): Rural | |
| Region | 1): Large centrals, 2): Small peripherals, 3): Metropolis | The geographical region of Ethiopia where household heads live. Tigray, Amhara, Oromia, and Sothern Nations Nationalities and Peoples Region (SNNPRs) were categorized under larger central regions; Afar, Somali, Benishangul, and Gambella were under Small peripherals, while Metropolis include Harari, Dire Dawa, and Addis Ababa regions |
| Ecological Zone | 1): Tropical zone, 2): Subtropical zone, 3): Cool zone | Dry lowland (Kolla)- is below 1500 metres in elevation; Subtropical zone (Dry to Wet Cool Highlands) - includes the highlands areas of 1500 - 2500 metres in elevation (Weyna-Dega); Cold highland zone (Dega)- is above 2500 metres in elevation. |