Is women’s empowerment associated with coverage of RMNCH interventions in low- and middle-income countries? An analysis using a survey-based empowerment indicator, the SWPER.

_Fernanda Ewerling, Fernando C. Wehrmeister, Cesar G. Victora, Anita Raj, Lotus McDougal, Aluisio J. D. Barros_

**Online Supplementary Document**

*Table S1. Variables that compose the survey-based women’s empowerment (SWPER) index and the changes made in the global version of the index (compared to the African-oriented SWPER index).*

| Item (v)                                                                 | Code or unit                        | Changes |
|------------------------------------------------------------------------|-------------------------------------|---------|
| **Attitude to violence domain**                                        |                                     |         |
| 1. Beating justified if wife goes out without telling husband          | Yes = -1; DK=0; No=1                | No changes |
| 2. Beating justified if wife neglects the children                     | Yes = -1; DK=0; No=1                | No changes |
| 3. Beating justified if wife argues with husband                       | Yes = -1; DK=0; No=1                | No changes |
| 4. Beating justified if wife refuses to have sex with husband          | Yes = -1; DK=0; No=1                | No changes |
| 5. Beating justified if wife burns the food                            | Yes = -1; DK=0; No=1                | No changes |
| **Social independence domain**                                         |                                     |         |
| 6. Frequency of reading newspaper or magazine                           | Not at all=0; <once a week=1; ≥once a week=2 | No changes |
| 7. Woman education in completed years of schooling                     | Years                              | No changes |
| 8. Age of woman at first birth*                                         | Years                              | No changes |
| 9. Age at first cohabitation                                            | Years                              | No changes |
| 10. Age difference: woman’s minus husband’s years of schooling         | Years                              | No changes |
| **Decision-making domain**                                             |                                     |         |
| 12. Who usually decides on respondent’s health care                    | Husband or other alone= -1; joint decision=0; respondent alone=1 | Husband or other alone= -1; joint decision=0; respondent alone=1 |
| 13. Who usually decides on large household purchases                   | Husband or other alone= -1; joint decision=0; respondent alone=1 | Husband or other alone= -1; joint decision=0; respondent alone=1 |
| 14. Who usually decides on visits to family or relatives               | Husband or other alone= -1; joint decision=0; respondent alone=1 | Husband or other alone= -1; joint decision=0; respondent alone=1 |
| X. Respondent worked in last 12 months                                 | Have a job, but on leave last 7 days = 2; Currently working = 2 | Item excluded |
Following the SWPER methodology, age at first birth was imputed for those women who had not had a child.

*Table S2. Definition of the Composite Coverage Index (CCI) indicators.*

| Intervention | Indicator definition | Numerator | Denominator |
|--------------|----------------------|-----------|-------------|
| **Reproductive health** | | | |
| Demand for family planning satisfied with modern methods (DFPSm) | Percentage of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods | Number of women of reproductive age (15–49 years) who have their need for family planning satisfied with modern methods | Total number of women of reproductive age (15–49 years) in need of family planning |
| **Maternal and newborn health** | | | |
| Antenatal care - four or more visits (ANC4) | Percentage of women attended four or more times during pregnancy by any provider | Number of women ages 15–49 who were attended four or more times during the pregnancy that led to their last birth in the 3 years preceding the survey by any provider | Total number of women ages 15–49 with a live birth in the 3 years preceding the survey |
| Skilled birth attendant (SBA) | Percentage of live births attended by skilled health personnel | Number of live births to women ages 15–49 years in the 3 years prior to the survey who were attended during delivery by skilled health personnel | Total number of live births to women ages 15–49 years in the 3 years preceding the survey |
| **Immunization** | | | |
| Immunized against Bacillus Calmette–Guérin (BCG) | Percentage of surviving infants who received BCG vaccine | Number of surviving infants who received BCG vaccine | Total number of surviving infants |
| Immunized with three doses of diphtheria–tetanus–pertussis (DPT3) | Percentage of infants who received three doses of diphtheria–tetanus–pertussis vaccine | Number of surviving infants who received three doses of diphtheria with tetanus toxoid and pertussis containing vaccine | Total number of surviving infants |
| Immunized against measles (MSL) | Percentage of surviving infants who received the first dose of measles containing vaccine | Number of surviving infants who received the first dose of measles containing vaccine by their first birthday (or as recommended in the national immunization schedule) | Total number of surviving infants |
| **Management of child illness** | | | |
| Oral rehydration salts treatment of diarrhoea (ORS) | Percentage of children ages 0–59 months with diarrhoea receiving oral rehydration salts (oral rehydration solution packets or pre-packaged oral rehydration solution fluids) | Number of children ages 0–59 months with diarrhoea in the two weeks prior to the survey receiving oral rehydration salts | Total number of children ages 0–59 months with diarrhoea in the two weeks prior to the survey |
| Careseeking for symptoms of pneumonia (CPNM) | Percentage of children ages 0–59 months with suspected pneumonia taken to a health care provider | Number of children ages 0–59 months with symptoms of pneumonia in the two weeks prior to the survey who were taken to a health care provider | Total number of children ages 0–59 months with symptoms of pneumonia (cough with fast breathing due to problem in the chest or problem in the chest and blocked nose) in the two weeks prior to the survey |
| Country              | Survey year | CCI (%)       | Attitude to violence | Social independence | Decision-making |
|---------------------|-------------|---------------|----------------------|---------------------|-----------------|
|                     |             | Q1  | Q2  | Q3  | Q4  | Q5  | Q1  | Q2  | Q3  | Q4  | Q5  | Q1  | Q2  | Q3  | Q4  | Q5  | Q1  | Q2  | Q3  | Q4  | Q5  |
| Afghanistan         | 2015        | 39.2 | 43.4 | 43.3 | 52.8 | 60.6 | -0.94 | -0.80 | -0.81 | -0.81 | -0.55 | -0.58 | -0.52 | -0.48 | -0.51 | -0.37 | -0.12 | -0.35 | -0.46 | -0.31 | -0.24 |
| Albania             | 2008        | 57.2 | 63.8 | 66.8 | 66.3 | 66.9 | -0.09 | 0.15  | 0.30  | 0.44  | 0.64  | 0.57  | 0.53  | 0.69  | 0.92  | 1.30  | 0.13  | 0.34  | 0.59  | 0.71  | 0.90  |
| Angola              | 2015        | 22.5 | 32.2 | 46.8 | 60.8 | 71.1 | -0.08 | 0.00  | 0.19  | 0.48  | 0.63  | -0.50 | -0.57 | -0.36 | -0.08 | 0.42  | 0.43  | 0.41  | 0.48  | 0.67  | 0.83  |
| Armenia             | 2015        | 66.9 | 73.1 | 73.9 | 74.5 | 80.7 | 0.48  | 0.54  | 0.56  | 0.64  | 0.70  | 0.46  | 0.61  | 0.76  | 0.98  | 1.14  | 0.75  | 0.83  | 0.87  | 0.92  | 0.93  |
| Azerbaijan          | 2006        | 35.8 | 43.5 | 50.5 | 47.5 | 56.9 | -0.69 | -0.55 | -0.22 | 0.06  | 0.33  | 0.58  | 0.63  | 0.65  | 0.85  | 1.01  | 0.02  | 0.01  | 0.22  | 0.29  | 0.54  |
| Bangladesh          | 2014        | 56.8 | 63.0 | 64.0 | 67.9 | 75.9 | 0.22  | 0.27  | 0.36  | 0.38  | 0.54  | -0.88 | -0.75 | -0.66 | -0.57 | -0.11 | 0.01  | 0.07  | 0.11  | 0.12  | 0.28  |
| Benin               | 2011        | 38.6 | 47.1 | 53.6 | 55.9 | 60.9 | 0.27  | 0.37  | 0.34  | 0.39  | 0.51  | -0.62 | -0.58 | -0.51 | -0.37 | 0.24  | -0.09 | -0.07 | -0.02 | 0.05  | 0.30  |
| Bolivia             | 2008        | 49.4 | 58.0 | 64.1 | 68.8 | 73.8 | 0.38  | 0.46  | 0.51  | 0.56  | 0.69  | -0.18 | 0.00  | 0.21  | 0.50  | 1.11  | 0.61  | 0.74  | 0.79  | 0.86  | 0.99  |
| Burkina Faso        | 2010        | 41.9 | 47.2 | 53.6 | 58.5 | 68.3 | -0.16 | -0.19 | -0.18 | -0.11 | 0.19  | -0.78 | -0.73 | -0.72 | -0.64 | -0.17 | -0.81 | -0.84 | -0.84 | -0.74 | -0.39 |
| Burundi             | 2016        | 60.9 | 62.2 | 62.5 | 62.2 | 66.0 | -0.61 | -0.53 | -0.44 | -0.36 | -0.03 | -0.24 | -0.16 | -0.19 | -0.14 | 0.37  | 0.22  | 0.27  | 0.27  | 0.38  | 0.55  |
| Cambodia            | 2014        | 64.1 | 68.2 | 72.1 | 73.0 | 71.1 | -0.29 | -0.20 | -0.17 | -0.14 | 0.17  | -0.03 | 0.03  | 0.10  | 0.18  | 0.46  | 0.85  | 0.86  | 0.88  | 0.88  | 0.87  |
| Cameroon            | 2011        | 23.5 | 42.9 | 52.1 | 58.0 | 65.5 | -0.25 | -0.18 | -0.10 | 0.07  | 0.37  | -0.92 | -0.59 | -0.44 | -0.12 | 0.35  | -0.71 | -0.42 | -0.29 | -0.12 | 0.09  |
| Chad                | 2014        | 20.9 | 24.8 | 25.1 | 26.2 | 45.3 | -1.03 | -1.00 | -0.93 | -0.88 | -0.83 | -0.85 | -0.88 | -0.88 | -0.89 | -0.61 | -0.56 | -0.55 | -0.59 | -0.69 | -0.47 |
| Comoros             | 2012        | 41.3 | 48.4 | 54.3 | 60.8 | 56.9 | -0.26 | -0.06 | 0.03  | 0.13  | 0.24  | -0.41 | -0.36 | -0.01 | 0.14  | 0.75  | -0.54 | -0.28 | -0.10 | -0.15 | -0.11 |
| Congo               | 2013        | 37.9 | 42.3 | 45.6 | 52.0 | 59.1 | -0.84 | -0.76 | -0.67 | -0.63 | -0.47 | -0.48 | -0.43 | -0.42 | -0.31 | 0.19  | -0.23 | -0.17 | -0.19 | 0.01  | 0.12  |
| Democratic Republic | 2011        | 29.4 | 38.6 | 41.7 | 53.1 | 59.1 | -0.32 | -0.23 | -0.32 | -0.30 | 0.20  | -0.56 | -0.57 | -0.60 | -0.45 | 0.00  | -0.61 | -0.56 | -0.62 | -0.47 | -0.25 |
| Dominican Republic  | 2013        | 77.1 | 82.9 | 77.8 | 79.8 | 79.6 | 0.68  | 0.74  | 0.76  | 0.77  | 0.79  | -0.15 | 0.18  | 0.43  | 0.69  | 1.16  | 0.74  | 0.87  | 0.92  | 0.95  | 1.04  |
| Egypt               | 2014        | 73.9 | 76.0 | 80.3 | 80.6 | 80.2 | -0.32 | -0.06 | 0.21  | 0.39  | 0.58  | -0.21 | -0.03 | 0.25  | 0.47  | 0.93  | 0.10  | 0.25  | 0.44  | 0.53  | 0.74  |
| Eswatini            | 2006        | 70.1 | 75.5 | 79.5 | 81.3 | 82.9 | 0.31  | 0.41  | 0.52  | 0.52  | 0.67  | -0.17 | 0.02  | 0.18  | 0.49  | 0.94  | -0.17 | -0.06 | 0.10  | 0.24  | 0.46  |
| Ethiopia            | 2016        | 31.8 | 40.0 | 44.2 | 49.6 | 65.3 | -0.89 | -0.93 | -0.85 | -0.63 | -0.12 | -0.75 | -0.75 | -0.71 | -0.61 | -0.14 | 0.37  | 0.42  | 0.46  | 0.57  | 0.78  |

**Table S3.** Composite Coverage Index estimate and mean women’s empowerment level in attitude to violence, social independence and decision making by wealth quintiles.
| Country      | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------|------|------|------|------|------|------|
| Gabon       | 47.3 | 56.9 | 57.5 | 67.9 | 61.6 | 64.2 |
| Gambia      | 58.0 | 58.2 | 59.4 | 64.2 | 67.1 | 67.1 |
| Ghana       | 60.7 | 61.1 | 68.0 | 68.5 | 69.8 | 69.8 |
| Guatemala   | 58.6 | 64.1 | 70.6 | 75.9 | 80.0 | 75.1 |
| Guinea      | 25.6 | 32.6 | 38.8 | 46.5 | 61.6 | 57.9 |
| Guyana      | 66.4 | 70.0 | 78.9 | 69.5 | 67.8 | 75.1 |
| Haiti       | 37.9 | 43.8 | 51.6 | 58.3 | 65.3 | 36.7 |
| Honduras    | 74.1 | 78.8 | 81.3 | 82.2 | 83.6 | 36.7 |
| India       | 59.9 | 68.8 | 74.4 | 78.0 | 81.0 | 63.4 |
| Indonesia   | 63.0 | 76.3 | 78.6 | 80.7 | 78.4 | 67.4 |
| Kenya       | 56.4 | 67.2 | 71.4 | 76.2 | 80.0 | 75.1 |
| Kyrgyzstan  | 71.7 | 70.9 | 68.1 | 66.3 | 75.7 | 71.7 |
| Lesotho     | 70.5 | 72.0 | 77.5 | 76.1 | 79.8 | 70.5 |
| Liberia     | 50.6 | 59.4 | 63.9 | 65.0 | 64.6 | 50.6 |
| Madagascar  | 36.7 | 43.2 | 50.5 | 58.3 | 68.3 | 46.9 |
| Malawi      | 75.1 | 76.4 | 76.7 | 78.6 | 78.6 | 78.6 |
| Maldives    | 75.8 | 76.2 | 72.5 | 75.4 | 67.4 | 75.8 |
| Mali        | 30.0 | 37.4 | 39.1 | 54.3 | 64.2 | 58.9 |
| Moldova     | 67.9 | 69.8 | 77.1 | 72.4 | 76.7 | 59.4 |
| Morocco     | 50.4 | 57.7 | 63.7 | 68.3 | 72.3 | 50.4 |
| Mozambique  | 40.4 | 44.6 | 53.4 | 62.1 | 72.0 | 40.4 |
| Myanmar     | 56.8 | 62.7 | 68.2 | 76.6 | 83.5 | 56.8 |
| Namibia     | 70.3 | 76.4 | 77.9 | 78.8 | 81.1 | 70.3 |
| Nepal       | 60.9 | 62.2 | 64.7 | 68.3 | 68.7 | 53.7 |
| Nicaragua   | 63.6 | 75.9 | 79.2 | 79.8 | 82.2 | 63.6 |
| Niger       | 32.2 | 40.4 | 41.2 | 46.9 | 63.4 | 46.9 |
| Nigeria     | 12.8 | 24.0 | 39.8 | 51.1 | 67.4 | 55.8 |
| Pakistan    | 46.4 | 55.8 | 63.3 | 69.9 | 74.4 | 64.2 |
| Country          | 2016  | 2017  | 2018  | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  | 2025  | 2026  | 2027  | 2028  | 2029  | 2030  | 2031  |
|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peru             | 65.3  | 74.1  | 75.1  | 79.0  | 80.8  | 0.66  | 0.72  | 0.75  | 0.76  | 0.76  | -0.01 | 0.44  | 0.82  | 1.09  | 1.63  | 0.37  |
| Philippines      | 62.9  | 70.8  | 74.0  | 74.5  | 75.1  | 0.53  | 0.61  | 0.65  | 0.68  | 0.70  | 0.28  | 0.56  | 0.78  | 1.04  | 1.41  | 0.82  |
| Rwanda           | 63.8  | 67.9  | 68.7  | 68.9  | 71.4  | -0.09 | -0.03 | 0.08  | 0.12  | 0.41  | 0.10  | 0.19  | 0.21  | 0.34  | 0.70  | 0.37  |
| Sao Tome & Principe | 66.9  | 63.3  | 67.4  | 69.5  | 74.4  | 0.34  | 0.44  | 0.48  | 0.38  | 0.51  | -0.32 | -0.32 | -0.15 | -0.09 | 0.40  | 0.15  |
| Senegal          | 47.5  | 55.6  | 64.1  | 69.5  | 75.7  | -1.18 | -0.77 | -0.39 | -0.06 | 0.29  | -0.69 | -0.47 | -0.28 | 0.00  | 0.60  | -1.09 |
| Sierra Leone     | 63.0  | 63.1  | 64.8  | 69.0  | 72.9  | -0.79 | -0.72 | -0.72 | -0.61 | -0.29 | -0.67 | -0.65 | -0.64 | -0.64 | -0.21 | -0.05 |
| South Africa     | 74.1  | 69.5  | 75.8  | 78.9  | 79.9  | 0.58  | 0.67  | 0.69  | 0.70  | 0.75  | 0.56  | 0.69  | 0.98  | 1.16  | 1.44  | 0.84  |
| Tajikistan       | 66.1  | 66.2  | 72.8  | 70.7  | 73.2  | -0.87 | -0.83 | -0.66 | -0.48 | -0.23 | 0.43  | 0.44  | 0.51  | 0.59  | 0.74  | -0.06 |
| Tanzania         | 50.1  | 57.0  | 62.9  | 69.6  | 72.9  | -0.76 | -0.55 | -0.61 | -0.35 | 0.04  | -0.36 | -0.29 | -0.14 | 0.02  | 0.51  | -0.21 |
| Timor-Leste      | 52.6  | 55.3  | 61.6  | 68.5  | 74.8  | -1.17 | -1.07 | -0.94 | -0.90 | -0.70 | 0.03  | 0.13  | 0.23  | 0.43  | 0.90  | 0.79  |
| Togo             | 46.0  | 46.2  | 47.6  | 56.4  | 65.7  | -0.19 | 0.07  | 0.16  | 0.27  | 0.44  | -0.57 | -0.44 | -0.36 | -0.12 | 0.40  | -0.31 |
| Uganda           | 59.1  | 62.0  | 65.0  | 67.9  | 71.7  | -0.31 | -0.19 | -0.05 | 0.04  | 0.35  | -0.50 | -0.44 | -0.35 | -0.15 | 0.39  | 0.29  |
| Zambia           | 61.1  | 65.3  | 67.8  | 75.9  | 81.2  | 0.57  | 0.51  | 0.36  | 0.03  | 0.36  | -0.47 | -0.41 | -0.32 | -0.14 | 0.43  | 0.09  |
| Zimbabwe         | 66.4  | 68.2  | 76.0  | 76.4  | 81.7  | -0.04 | 0.14  | 0.20  | 0.33  | 0.54  | -0.18 | -0.15 | 0.01  | 0.36  | 0.78  | 0.60  |