

Regional Profiles of Family Planning Media Exposure, Contraceptive Prevalence, and Fertility Across Low- and Middle-Income Countries: A Cross-National Descriptive Analysis

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Abstract

Background

Family planning programmes in low- and middle-income countries (LMICs) invest substantially in media-based communication to increase contraceptive uptake and reduce fertility. Yet comparative evidence on how population-level media reach relates to contraceptive prevalence and fertility outcomes across global regions remains limited. This study describes and compares regional and country-level profiles of family planning media exposure, modern contraceptive prevalence, unmet need, demand satisfaction, and total fertility rate (TFR) across 49 LMICs.

Methods

A cross-national descriptive analysis was conducted using DHS STATcompiler data for 49 countries. Three regions had sufficient country coverage to support group-level comparison: Sub-Saharan Africa ($n = 31$), South and Southeast Asia ($n = 11$), and Latin America and the Caribbean ($n = 6$); Egypt, the only eligible Middle East and North Africa country, is reported individually rather than as a regional group. The most recent Standard DHS round per country (2010–2024) was used. Indicators included TFR, mCPR, unmet need, demand satisfied by modern methods (SDG 3.7.1), and a derived translation gap (100 minus demand satisfied). Pearson correlations are reported as descriptive measures only; no inferential testing was conducted.

Results

Mean TFR ranged from 2.7 in Latin America and the Caribbean to 4.5 in Sub-Saharan Africa. Mean mCPR was lowest in Sub-Saharan Africa (30.4%) and highest in Latin America and the Caribbean (56.8%). The mean translation gap was largest in Sub-Saharan Africa (50.1%). At the country level, mCPR ($r = -0.68$) and demand satisfied ($r = -0.61$) showed stronger inverse descriptive associations with TFR than radio reach ($r = 0.26$). Eleven countries had both unmet need above 25% and mCPR below 25%, predominantly in Sub-Saharan Africa.

Conclusions

Actual contraceptive uptake and demand satisfaction are more closely associated with fertility levels than media reach alone. Substantial heterogeneity within and across regions underscores the need for context-specific approaches. Countries with simultaneously high unmet need and low contraceptive prevalence represent priority settings where service delivery investment is most urgently needed alongside communication strategies.

Introduction

Total fertility rate (TFR), the average number of children a woman would bear over her reproductive lifetime at prevailing age-specific rates, is one of the most closely tracked indicators of population change and a key driver of health system demand, educational investment, and long-run socioeconomic development [1]. Global fertility has fallen substantially since the 1960s, but the pace of that decline has been uneven. Sub-Saharan Africa remains the world's highest-fertility region by a wide margin; in this analysis, Niger recorded a TFR of 7.6 children per woman in its most recent available survey, compared with 2.0 in both Colombia and India [2, 3]. Narrowing that gap, and accelerating the stalled or slow fertility transitions evident in parts of West and Central Africa, remains one of the central challenges of global reproductive health policy [4, 5].

Modern contraceptive prevalence rate (mCPR) is among the most important proximate determinants of fertility [6, 7]. By preventing unintended pregnancies and enabling healthy birth spacing, it accounts for a substantial share of variation in fertility levels across populations. Global contraceptive prevalence rose from around 55% in 1990 to 63% by 2010, though progress has been much slower in Sub-Saharan Africa, where prevalence increased from 13% to 33% over roughly the same period, the lowest of any global region [8, 9]. Alongside mCPR, the proportion of demand for family planning satisfied by modern methods provides a more complete picture of how effectively health systems are meeting reproductive needs: it accounts for both current users and women with unmet need, and is now formally embedded in global development frameworks as SDG indicator 3.7.1 [10]. When demand is substantial but satisfaction remains low (a situation we describe here as the 'translation gap'), the primary bottleneck is likely in service delivery rather than awareness.

Family planning communication delivered through mass media is a standard component of social and behaviour change communication (SBCC) strategies in LMICs [11, 12, 13]. The evidence on media effects at the individual level is broadly positive: exposure to family planning messages via radio, television, and print is associated with higher contraceptive knowledge, more favourable attitudes, and in some cases higher uptake [14, 15, 16]. Radio has historically dominated in Sub-Saharan Africa given its geographic reach and affordability, while television

has been more prominent in settings with higher household incomes and literacy [17]. More recently, mobile phones and social media have attracted growing programme interest, though the evidence base for these channels in LMICs remains thinner [18, 19]. What is less clear is whether population-level differences in media reach, as opposed to individual-level exposure, translate into meaningful differences in contraceptive uptake and fertility at the national level.

Cross-national multi-regional descriptive analyses that place media reach alongside contraceptive prevalence, unmet need, demand satisfaction, and TFR in the same analytical frame are relatively scarce, particularly using DHS data that extends into the mid-2020s. Most published work either examines individual-level associations within a single country, or focuses narrowly on one media channel or region. A cross-national descriptive profile (one that maps where the translation gap is largest, how media channels vary by region, and how these patterns relate to fertility at the country level) could help orient investment decisions and highlight settings where particular types of support are most needed.

This paper provides that profile. Using the most recent available Standard DHS data (2010–2024) for 49 countries, we describe country-level and regional profiles of mCPR, unmet need, demand satisfaction, family planning media exposure, and TFR. We do not attempt to establish causal relationships; the country-level aggregate design, heterogeneous survey years, and limited sample all preclude that. We hope the descriptive patterns documented here are useful both as a baseline for tracking progress toward SDG 3.7 targets and as a prompt for more targeted within-country research in settings where the translation gap is most acute.

Methods

Study Design and Data Source

This study used a cross-national descriptive design based on secondary data from the DHS Program STATcompiler (<https://www.statcompiler.com>), a publicly accessible repository of national-level reproductive health indicators derived from Demographic and Health Surveys. The DHS Program conducts nationally representative household surveys using standardised questionnaires across LMICs, enabling cross-country comparability.

The analytical sample comprised 49 countries. Regional classification followed the DHS Program's groupings, and three regions had sufficient country coverage to support group-level descriptive comparison: Sub-Saharan Africa ($n = 31$), South and Southeast Asia ($n = 11$), and Latin America and the Caribbean ($n = 6$). Egypt was the only country meeting inclusion criteria for the Middle East and North Africa; because a single country cannot yield a meaningful regional summary (there is no within-region dispersion to describe), Egypt is reported as an individual country-level profile throughout rather than treated as a fourth regional group, and it remains part of the full 49-country analytical sample used in all country-level analyses. Countries were included if a Standard DHS round had been conducted between 2010 and 2024 with available TFR and mCPR data. Mini-DHS and Malaria Indicator Surveys were excluded as they do not consistently include the full suite of family planning indicators. Where multiple Standard DHS rounds existed within the study window, only the most recent was retained, resulting in survey years ranging from 2011 (Honduras) to 2024 (Malawi, Nigeria, Zambia).

Variables

Four reproductive health indicators were extracted: (1) TFR (children per woman, ages 15–49), the primary fertility outcome; (2) mCPR, defined as the percentage of currently married or in-union women using any modern contraceptive method; (3) unmet need for family planning, defined as the percentage of married or in-union women who want to stop or delay childbearing but are not using contraception; and (4) demand for family planning satisfied by modern methods (SDG indicator 3.7.1), calculated as mCPR divided by the sum of mCPR and unmet need, expressed as a percentage [10]. A translation gap indicator was derived for each country as 100 minus demand satisfied, representing the proportion of total demand not being met by modern methods.

Three media exposure indicators were extracted where available: the percentage of men reporting exposure to family planning messages via radio, television, and newspapers or magazines. These reflect men's reported exposure rather than women's, as women-specific equivalents were not consistently available across the full country sample due to differences in questionnaire modules across DHS phases. Given that radio in Sub-Saharan Africa and South Asia is predominantly communal household listening, men's radio exposure is used as a proxy for household-level media reach and this limitation is acknowledged.

Statistical Analysis

All analyses were conducted in Stata version 15. Descriptive statistics were computed for all indicators overall and stratified by global region. Pearson correlation coefficients were calculated between TFR and each of mCPR, demand satisfied, unmet need, radio reach, television

reach, and magazine reach as descriptive summaries of the direction and magnitude of linear association at the country level. These coefficients are presented as descriptive measures only and should not be interpreted as inferential statistics; the country sample is neither random nor sufficiently large for formal hypothesis testing, and country-level associations are subject to ecological fallacy and confounding by unmeasured structural factors [20]. Scatter plots with ordinary least squares fitted lines were generated to visualise descriptive patterns.

Results

Regional Profiles of Fertility, Contraceptive Prevalence, and Demand Satisfaction

Table 1 presents overall descriptive profiles and profiles for the three regions with sufficient country coverage for group-level comparison; Egypt, the sole Middle East and North Africa country in the sample, is included in the overall statistics and described individually below rather than as a fourth regional row. Across all 49 countries, mean TFR was 3.9 children per woman (SD 1.3; range 1.9–7.6), mean mCPR was 36.2% (SD 19.3; range 10.6–75.9%), mean unmet need was 20.3% (SD 8.6; range 7.0–38.0%), and mean demand satisfied was 54.9% (SD 19.1; range 21.3–86.4%). The mean translation gap (the proportion of demand not met by modern methods) was 45.1% overall.

Substantial regional variation was observed. Sub-Saharan Africa had the highest mean TFR (4.54; SD 0.98) and the lowest mean mCPR (30.4%; SD 18.3%), while Latin America and the Caribbean had the lowest mean TFR (2.68; SD 0.41) and the highest mean mCPR (56.8%; SD 15.9%). The translation gap was widest in Sub-Saharan Africa (50.1%) and narrowest in Latin America and the Caribbean (30.6%), indicating that Sub-Saharan African countries convert a smaller proportion of family planning demand into modern contraceptive use than other regions. Radio was the dominant media channel in Sub-Saharan Africa (mean reach 42.2%) and Latin America and the Caribbean (41.4%), while television reach was higher in South and Southeast Asia (34.7%) and Latin America and the Caribbean (40.8%). Egypt, the sole Middle East and North Africa country in the sample, had a TFR of 3.5, mCPR of 56.9%, unmet need of 12.6%, and demand satisfied of 80.0%, a profile closer to Latin America and the Caribbean than to Sub-Saharan Africa; with only one country available, this cannot be generalised to the region as a whole.

Within Sub-Saharan Africa, country-level variation was particularly marked. Table 2 presents profiles for all 49 countries ranked by mCPR within region. Seven Sub-Saharan African countries had mCPR at or above 50%: Malawi (66.4%), Zimbabwe (65.8%), Lesotho (65.3%), Rwanda (58.4%), Kenya (56.9%), South Africa (54.0%), and Zambia (52.5%), while sixteen had mCPR below 25%. At the extremes, Niger recorded a TFR of 7.6 with mCPR of only 12.2%, while Colombia achieved a TFR of 2.0 with mCPR of 75.9%, the highest in the sample. At the country level, mCPR showed a strong inverse descriptive association with TFR ($r = -0.68$), and demand satisfied showed a similarly strong association ($r = -0.61$). Unmet need showed a positive descriptive association with TFR ($r = 0.51$). These patterns are broadly consistent with the proximate determinants of fertility framework, though causal inference is not possible from this cross-sectional aggregate analysis.

Table 1
Descriptive profiles of reproductive health and media indicators by global region

Region	N	Mean TFR (SD)	Mean mCPR % (SD)	Mean Unmet Need % (SD)	Mean Demand Satisfied % (SD)	Mean Translation Gap % (SD)	Mean Radio Reach % (SD)¶
Sub-Saharan Africa	31	4.54 (0.98)	30.4 (18.3)	22.8 (7.7)	49.9 (19.2)	50.1 (19.2)	42.2 (17.1)¶
South & Southeast Asia	11	2.81 (1.09)	39.3 (15.7)	17.2 (7.4)	58.4 (15.6)	41.6 (15.6)	17.8 (9.9)¶
Latin America & Caribbean	6	2.68 (0.41)	56.8 (15.9)	15.0 (11.5)	69.4 (15.8)	30.6 (15.8)	41.4 (4.3)¶
Overall	49	3.90 (1.26)	36.2 (19.3)	20.3 (8.6)	54.9 (19.1)	45.1 (19.1)	38.3 (17.5)

Note: SD = standard deviation. TFR = total fertility rate. mCPR = modern contraceptive prevalence rate. Translation gap = 100 minus demand satisfied (%). ¶ Men's reported exposure to family planning messages via radio. ¶ n = 29. ¶ n = 6. ¶ n = 4. The Overall row includes all 49 countries in the analytical sample. Egypt, the sole Middle East and North Africa country, is not shown as a separate regional row because a single country cannot support a group-level dispersion estimate; it is included in the Overall row and reported individually in-text and in Table 2 (TFR 3.5; mCPR 56.9%; unmet need 12.6%; demand satisfied 80.0%; radio data unavailable). One country (Ethiopia) missing demand satisfied data.

Country-Level Profiles

Table 2 presents country-level profiles for all 49 countries. The wide within-region variation in Sub-Saharan Africa is particularly notable: the range of mCPR within the region (10.6–66.4%) is broader than the difference between regional means, underscoring that Sub-Saharan Africa

should not be treated as a homogeneous entity in family planning programming. In South and Southeast Asia, Indonesia, India, Bangladesh, and Myanmar each exceeded 50% mCPR, while Afghanistan (19.8%) and Maldives (14.9%) lagged considerably. In Latin America and the Caribbean, all six countries had mCPR above 30%, with Colombia achieving the highest mCPR in the entire sample (75.9%) alongside the joint lowest TFR (2.0).

Table 2
Country-level reproductive health profiles ranked by region and mCPR (most recent Standard DHS, 2010–2024)

Country	Year	TFR	mCPR (%)	Unmet Need (%)	Demand Satisfied (%)
Latin America & Caribbean					
Colombia	2015	2.0	75.9	7.0	86.4
Dominican Republic	2013	2.5	68.6	10.8	83.0
Honduras	2011	2.9	63.8	10.7	76.1
Peru	2012	2.6	51.8	9.3	61.1
Guatemala	2014	3.1	48.9	13.9	65.6
Haiti	2016	3.0	31.8	38.0	44.0
Middle East & North Africa					
Egypt	2014	3.5	56.9	12.6	80.0
South & Southeast Asia					
Indonesia	2017	2.4	57.2	10.6	77.1
India	2019	2.0	56.4	9.4	74.1
Bangladesh	2022	2.3	54.7	10.0	73.9
Myanmar	2015	2.3	51.3	16.2	74.9
Cambodia	2021	2.7	44.7	11.5	60.8
Nepal	2022	2.1	42.7	20.8	54.7
Philippines	2022	1.9	41.8	12.4	59.1
Pakistan	2017	3.6	25.0	17.3	48.6
Timor-Leste	2016	4.2	24.1	25.3	46.9
Afghanistan	2015	5.3	19.8	24.5	42.2
Maldives	2016	2.1	14.9	31.4	29.8
Sub-Saharan Africa					
Malawi	2024	3.7	66.4	12.7	82.1
Zimbabwe	2015	4.0	65.8	10.4	85.2
Lesotho	2023	2.5	65.3	12.6	81.7
Rwanda	2019	4.1	58.4	13.6	75.2
Kenya	2022	3.4	56.9	13.9	74.7
South Africa	2016	2.6	54.0	14.9	77.8
Zambia	2024	4.0	52.5	15.6	73.9
Madagascar	2021	4.3	42.7	14.6	66.4
Ethiopia	2019	4.1	40.5	—	—
Uganda	2016	5.4	34.8	28.4	51.6
Burkina Faso	2021	4.4	31.5	15.5	63.9
Tanzania	2022	4.8	31.1	21.0	53.1
Ghana	2022	3.9	27.8	23.4	46.5
Note: Countries ranked by mCPR within region. Egypt is the sole country representing the Middle East and North Africa and is presented individually rather than as a regional group (see Methods and Table 1). — = data not available. TFR = total fertility rate. mCPR = modern contraceptive prevalence rate. Demand satisfied = demand for family planning satisfied by modern methods.					

Country	Year	TFR	mCPR (%)	Unmet Need (%)	Demand Satisfied (%)
Latin America & Caribbean					
Senegal	2023	4.0	25.6	19.1	56.1
Mozambique	2022	4.9	25.4	26.6	48.0
Liberia	2019	4.2	23.9	33.4	40.9
Burundi	2016	5.5	22.9	29.7	39.4
Sierra Leone	2019	4.2	20.9	24.8	45.4
Mali	2023	6.0	20.9	25.1	44.2
Cote d'Ivoire	2021	4.3	17.9	22.3	41.4
Togo	2013	4.8	17.3	33.6	32.3
Gabon	2019	3.9	17.3	33.4	29.7
Gambia	2019	4.4	17.1	24.2	39.6
Cameroon	2018	4.8	15.4	23.0	36.4
Nigeria	2024	4.8	15.3	21.0	37.1
Angola	2023	4.8	14.9	37.2	27.4
Mauritania	2019	5.2	12.8	31.1	28.2
Benin	2017	5.7	12.4	32.3	25.9
Niger	2012	7.6	12.2	16.0	40.8
Congo DR	2023	5.5	10.7	31.5	21.3
Guinea	2018	4.8	10.6	22.1	32.1
Note: Countries ranked by mCPR within region. Egypt is the sole country representing the Middle East and North Africa and is presented individually rather than as a regional group (see Methods and Table 1). — = data not available. TFR = total fertility rate. mCPR = modern contraceptive prevalence rate. Demand satisfied = demand for family planning satisfied by modern methods.					

Media Channel Reach

Radio was the dominant family planning media channel in Sub-Saharan Africa (mean 42.2% of men reached; range 13.8–79.7%) and Latin America and the Caribbean (mean 41.4%; range 37.5–47.6%), while television was more prominent in South and Southeast Asia (mean 34.7%) and Latin America and the Caribbean (mean 40.8%). Magazine reach was lowest in Sub-Saharan Africa (mean 12.0%) compared with South and Southeast Asia (23.8%) and Latin America and the Caribbean (32.5%), reflecting lower print media penetration.

The highest radio reach was recorded in Malawi (79.7%), Uganda (69.2%), Kenya (69.0%), and Rwanda (63.4%). Notably, Niger, the country with the highest TFR in the sample (7.6), also recorded relatively high radio reach (60.3%), illustrating that high media exposure does not straightforwardly correspond to higher contraceptive uptake or lower fertility. At the country level, radio reach showed a weak positive descriptive association with TFR ($r = 0.26$), a pattern most plausibly explained by the fact that Sub-Saharan Africa, the highest-fertility region, also has the highest radio saturation. Television reach ($r = -0.47$) and magazine reach ($r = -0.71$) showed inverse descriptive associations with TFR, likely reflecting underlying socioeconomic development gradients rather than a specific effect of these channels on fertility behaviour.

The Translation Gap and Countries of Greatest Concern

Table 3 presents the ten countries with the largest and ten with the smallest translation gaps. The Democratic Republic of Congo had the largest gap (78.7%), followed by Benin (74.1%), Angola (72.6%), Mauritania (71.8%), and Gabon (70.3%). These settings combine high unmet need with very low mCPR, indicating that expressed demand for family planning is not being met by modern contraceptive services. At the other end of the spectrum, Colombia (13.6%), Zimbabwe (14.8%), Malawi (17.9%), Lesotho (18.3%), and Egypt (20.0%) had the smallest translation gaps, reflecting relatively effective conversion of demand into use.

Eleven countries simultaneously had unmet need exceeding 25% and mCPR below 25%, a configuration indicating that both the supply of and demand for family planning services are substantially unmet. These countries were Angola, Benin, Burundi, the Democratic Republic of Congo, Gabon, Liberia, Mali, Mauritania, Togo, Timor-Leste, and Maldives. The first nine are in Sub-Saharan Africa; Timor-Leste and Maldives are the only non-African countries in this group. These settings represent priority contexts for integrated service delivery strengthening alongside demand-generation strategies.

Table 3
Countries with the largest and smallest translation gaps in family planning demand satisfaction

Country	Region	Unmet Need (%)	Demand Satisfied (%)	Translation Gap (%)	mCPR (%)
Ten countries with largest translation gap (highest unmet demand)					
Congo DR	Sub-Saharan Africa	31.5	21.3	78.7	10.7
Benin	Sub-Saharan Africa	32.3	25.9	74.1	12.4
Angola	Sub-Saharan Africa	37.2	27.4	72.6	14.9
Mauritania	Sub-Saharan Africa	31.1	28.2	71.8	12.8
Gabon	Sub-Saharan Africa	33.4	29.7	70.3	17.3
Maldives	South & SE Asia	31.4	29.8	70.2	14.9
Guinea	Sub-Saharan Africa	22.1	32.1	67.9	10.6
Togo	Sub-Saharan Africa	33.6	32.3	67.7	17.3
Cameroon	Sub-Saharan Africa	23.0	36.4	63.6	15.4
Nigeria	Sub-Saharan Africa	21.0	37.1	62.9	15.3
Ten countries with smallest translation gap (most effective demand conversion)					
Colombia	Latin America & Carib.	7.0	86.4	13.6	75.9
Zimbabwe	Sub-Saharan Africa	10.4	85.2	14.8	65.8
Malawi	Sub-Saharan Africa	12.7	82.1	17.9	66.4
Lesotho	Sub-Saharan Africa	12.6	81.7	18.3	65.3
Egypt	Middle East & N. Africa	12.6	80.0	20.0	56.9
South Africa	Sub-Saharan Africa	14.9	77.8	22.2	54.0
Indonesia	South & SE Asia	10.6	77.1	22.9	57.2
Honduras	Latin America & Carib.	10.7	76.1	23.9	63.8
Rwanda	Sub-Saharan Africa	13.6	75.2	24.8	58.4
Myanmar	South & SE Asia	16.2	74.9	25.1	51.3
Note: Translation gap = 100 minus demand satisfied (%). Countries are ranked within each group by translation gap. mCPR = modern contraceptive prevalence rate. Congo DR = Democratic Republic of Congo.					

Discussion

This cross-national descriptive analysis brings together profiles of family planning media exposure, contraceptive prevalence, unmet need, demand satisfaction, and fertility across 49 LMICs using the most recent available Standard DHS data. We discuss here what the data show, where caution is warranted in their interpretation, and what the findings might suggest for programming and future research.

Perhaps the most striking feature of the data is the scale of within-region heterogeneity, particularly in Sub-Saharan Africa. The range of mCPR across the 31 Sub-Saharan African countries in our sample (10.6–66.4%) is wider than the difference between the Sub-Saharan African and South and Southeast Asian regional means, and comparable in scale to the global range. Countries such as Malawi, Zimbabwe, Lesotho, Rwanda, and Kenya have achieved contraceptive prevalence comparable to or higher than several South and Southeast Asian countries. Meanwhile, the Democratic Republic of Congo, Guinea, and Benin remain at very low levels. This within-region spread is well documented in the literature [5, 21, 22] and matters for policy: strategies, supply chains, and communication approaches that work for Malawi are likely very

different from what is needed in Chad or Angola. Regional averages, while useful for broad orientation, should not be mistaken for a uniform landscape.

The translation gap analysis is, in our view, the most practically useful contribution of this paper. A large gap, where total demand is substantial but demand satisfied is low, suggests that women want to avoid or space pregnancies but are not accessing modern methods. The barriers driving this are likely supply-side in many settings: insufficient health facility coverage, provider shortages, inconsistent method availability, and financial or geographic access constraints [23, 24]. The Democratic Republic of Congo (78.7%), Benin (74.1%), and Angola (72.6%) illustrate this starkly: all three have unmet need above 30% yet mCPR below 15%. In these settings, additional investment in media campaigns is unlikely to close the gap without corresponding improvements in service delivery. By contrast, countries with small translation gaps (Colombia, Zimbabwe, Malawi, Lesotho) demonstrate that it is possible to build systems that convert expressed demand into use effectively, even in low-income settings, and their experience may hold lessons for higher-gap countries [23, 24]. In Malawi specifically, modern contraceptive use rose from 45.0% to 53.1% between 2015–16 and 2024, though this gain was driven largely by behavioural and service-delivery shifts rather than changes in the population's socioeconomic composition, and improvements in related maternal health indicators were not shared evenly across wealth and education groups [25], underscoring that even well-performing settings require sustained, equity-focused attention.

The descriptive association between mCPR and TFR ($r = -0.68$) and between demand satisfied and TFR ($r = -0.61$) are consistent with the broader literature on contraceptive transitions and proximate determinants of fertility [6, 7, 8, 9]. However, these coefficients should be read carefully. Countries with higher mCPR also differ from lower-mCPR countries on many structural dimensions, including female education, urbanisation, child mortality, income, and health system capacity, any of which could independently shape fertility [21, 26]. The ecological design means that individual-level inference is not valid and confounding by unmeasured structural factors is a genuine concern. We are documenting that, at the country level, higher mCPR and higher demand satisfaction tend to coincide with lower TFR; we are not claiming that increasing mCPR mechanically drives fertility down in the smooth manner suggested by a regression line.

The media channel findings deserve careful interpretation. Radio reach showed a positive descriptive association with TFR ($r = 0.26$): the opposite direction of what a naïve media-drives-behaviour model would predict. The most plausible explanation is confounding: Sub-Saharan Africa, which has both the highest average TFR and the highest radio saturation in the sample, drives this pattern. Niger illustrates it starkly: radio reach of 60.3% alongside TFR of 7.6 and mCPR of only 12.2%. Radio is dominant in Sub-Saharan Africa not because it is less effective, but because it is historically the most accessible broadcast medium in settings with lower television ownership and literacy rates [13, 17]. Television ($r = -0.47$) and magazine reach ($r = -0.71$) showed inverse associations with TFR, likely reflecting the correlation between media infrastructure and broader socioeconomic development. This is consistent with evidence from individual-level DHS analyses showing that media exposure is associated with higher contraceptive knowledge and more favourable attitudes, but that its influence on actual uptake is smaller than that of socioeconomic factors such as wealth and education [14, 15, 16]. Exposure to a message and acting on it are different things, and the gap between them depends on service availability, social norms, and individual circumstances that no campaign can substitute for [12, 13].

The eleven countries with both high unmet need ($> 25\%$) and low mCPR ($< 25\%$) represent, in our view, the clearest priority group identified by this analysis. They are concentrated in Sub-Saharan Africa, with Timor-Leste and Maldives as the only exceptions. In all eleven, the family planning system is failing women in a basic way: large numbers want to avoid or space pregnancies but are not accessing or using modern methods. Whether the primary barriers are supply-side or demand-side will vary by country and local context [23, 24], and the appropriate response, whether service delivery investment, community mobilisation, quality improvement, or some combination, requires country-specific analysis.

Several limitations should be kept in mind. First, the ecological design means that individual-level relationships cannot be inferred from these data. Second, the 49-country sample is small for formal statistical purposes, and the heavy over-representation of Sub-Saharan Africa (31 of 49) limits the meaningfulness of cross-regional comparisons. Third, media exposure data reflect men's reported exposure rather than women's, due to STATcompiler data limitations across DHS phases; while men's and women's household media environments are likely correlated, this is a meaningful mismatch for a paper about women's reproductive outcomes. Fourth, survey years range from 2012 to 2024, and some estimates, particularly Niger (2012), Dominican Republic (2013), Egypt (2014), and Honduras (2011), may not reflect current conditions. Fifth, Egypt was the only country meeting inclusion criteria for the Middle East and North Africa; we addressed this by reporting Egypt as an individual country profile rather than a regional average, but this means the analysis cannot speak to broader patterns in that region, and Egypt's profile should not be generalised beyond the country itself. Finally, structural determinants of fertility, including female education, urbanisation, gender norms, and income, are likely confounders of the associations we describe but are not accounted for in this analysis [26].

Conclusion

This cross-national analysis underscores a core tension in family planning programming: while media communication is a necessary and widely used tool, actual contraceptive uptake and effective demand satisfaction are more closely associated with fertility levels than media reach alone. The translation gap (the distance between what women want and what the health system delivers) is widest precisely where fertility remains highest, pointing to service delivery capacity as a more urgent priority than communication intensity in many settings. Countries such as Malawi, Zimbabwe, Rwanda, and Kenya demonstrate that closing this gap is possible within Sub-Saharan Africa even at lower income levels, and their experience deserves greater attention as a source of practical lessons for neighbours where progress has stalled. For family planning programmes and policymakers, the eleven countries simultaneously carrying high unmet need and low mCPR represent the clearest call to action: in these settings, the evidence points toward investment in accessible facilities, reliable supply chains, and trained providers as the foundation on which any communication strategy must be built.

Abbreviations

DHS
Demographic and Health Survey
LAC
Latin America and the Caribbean
LMIC
Low- and Middle-Income Country
mCPR
Modern Contraceptive Prevalence Rate
MENA
Middle East and North Africa
MIS
Malaria Indicator Survey
SBCC
Social and Behaviour Change Communication
SDG
Sustainable Development Goal
SSA
Sub-Saharan Africa
TFR
Total Fertility Rate

Declarations

Ethics approval and consent to participate:

This study used publicly available, de-identified secondary data from the DHS Program. The original data collection received ethical approval from relevant national ethics committees in each country. No additional ethical approval was required for this secondary analysis. Data access followed DHS Program protocols (<https://www.dhsprogram.com>).

Consent for publication:

Not applicable.

Clinical trial number

Not applicable.

Competing interests:

The authors declare no competing interests.

Funding:

No funding was received for this research.

Author Contribution

BM and CN conceived the study. CN led data acquisition, analysis, and initial manuscript drafting. BM, CN, MN, LC, and UM contributed to critical revision of the manuscript for intellectual content. All authors reviewed and approved the final version.

Data Availability

All data are publicly available through the DHS Program STATcompiler at <https://www.statcompiler.com>. The Stata do-file used for analysis is provided as Additional material 1.

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Figures

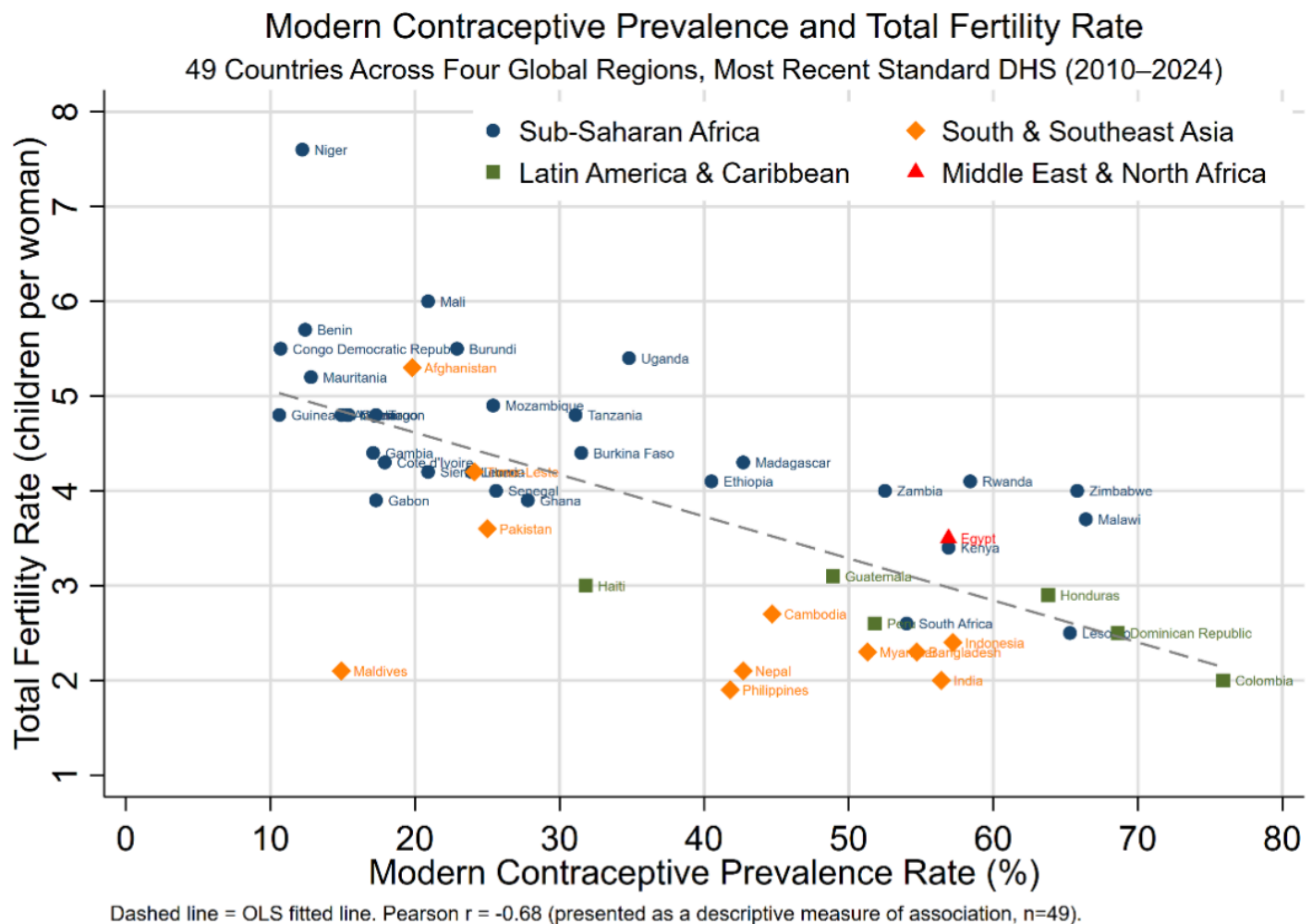


Figure 1

Scatter plot of modern contraceptive prevalence rate (mCPR) and total fertility rate (TFR) across 49 low- and middle-income countries, most recent Standard DHS (2010–2024). Countries are coloured by global region (navy circles = Sub-Saharan Africa; orange diamonds = South & Southeast Asia; green squares = Latin America & Caribbean; red triangles = Middle East & North Africa). The dashed line represents the overall ordinary least squares fitted line (Pearson $r = -0.68$, presented as a descriptive measure of association). Country-level labels are included for identification.

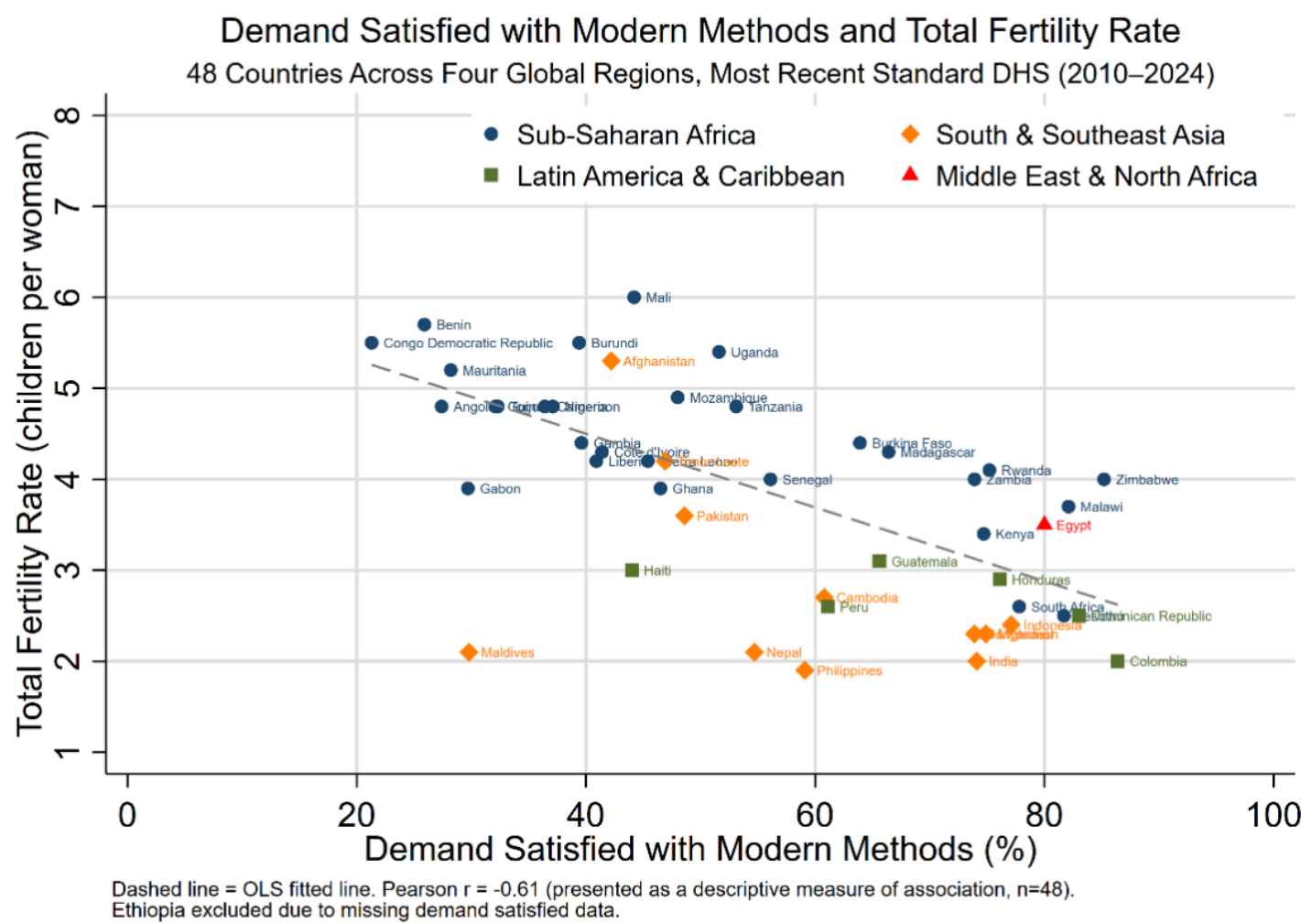


Figure 2

Scatter plot of demand for family planning satisfied by modern methods (%) and total fertility rate (TFR) across 48 countries with available data. Countries are coloured by global region as in Figure 1. The dashed line represents the overall OLS fitted line (Pearson $r = -0.61$, descriptive). Ethiopia is excluded due to missing demand satisfied data.

Supplementary Files

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- [mcprrtfrglobalanalysisfinal.do](#)
- [Graph.tif](#)