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Women's empowerment and intentions for additional children among reproductiveaged women: an analysis of demographic and health surveys in South Asia



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# Abstract

**Background** A substantial body of evidence indicates an inverse correlation between the empowerment of women and fertility rates. Women's empowerment is a central theme in global development initiatives, necessitating a thorough and updated evaluation of the current evidence regarding its relationship with fertility. This study sought to examine the correlation between women's empowerment and fertility intentions—specifically, the desire for additional children among reproductive-aged women living with at least one child in South Asian nations, amidst a backdrop of declining fertility rates in the region.

**Methods** Analyses utilize the latest standard Demographic and Health Surveys (DHS) from Afghanistan, Bangladesh, India, Nepal, and Pakistan for the period ranging from 2015 to 2022, which are nationally representative of women aged 15 to 49 years. To construct an effective empowerment indicator, we utilized the survey-based women's empowerment (SWPER) composite index established in the literature, which encompasses several dimensions, including decision-making participation, attitudes towards violence, and social independence. Multilevel mixed-effect logistic regression analysis was used to examine the relationship of interest.

**Results** Findings indicate that approximately one-third of South Asian women (31.1%) with at least one child expressed a desire for additional children, with the lowest percentage in Nepal (19.4%) and the highest in Afghanistan (42.3%). Higher empowerment among women in South Asia concerning attitudes toward violence (adjusted odds ratio [AOR]: 0.81; 95% confidence interval [CI]: 0.74–0.88) and decision-making (AOR: 0.88; 95% CI: 0.83–0.94) correlated with a lower likelihood to desire additional children. However, women with medium (AOR: 1.60; 95% CI: 1.51–1.70) and high (AOR: 1.59; 95% CI: 1.44–1.74) empowerment levels regarding social independence were more inclined to seek an additional child compared to those with low empowerment in this domain.

**Conclusions** This research revealed that specific dimensions of women's empowerment markedly reduce the desire for additional children in patriarchic and conservative South Asian settings. Strategies aimed at fertility regulation in South Asia must carefully assess and prioritize women's empowerment.

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Keywords Fertility intentions, Desire for more children, Women's empowerment, South Asia

# Introduction

Recently, there has been a decline in the number of children born to couples, which may have resulted in a reduction in population growth in the majority of highincome countries [1]. However, as the distribution of live births and total fertility rate (TFR) has shifted over the past seven decades across various global regions, researchers appear to be concerned about the distribution of demographic indicators in low- and middleincome countries [2]. In between 1950 and 2021, live births in South Asia increased from approximately 20–25% of global live births, despite the fact that the TFR in this region decreased from 6.35 to 2.07 [2]. South Asia is the most populous and densely inhabited geographical region in the world, home to around 1.919 billion people, or roughly one-fourth of the global population [3]. The substantial population in this region indicates that even slight alterations in fertility behavior can significantly impact the population as a whole. Therefore, South Asian countries have centered most of their population policies on population size and growth rates, aiming to develop strategies to influence them through fertility management [4].

The emphasis on the factors influencing fertility intentions is crucial for two reasons. First, intentions play a critical role in the causal relationship between fertility and socioeconomic factors [5]. The second pertains to the historic pattern prevalent in South Asia, characterized by early and universal marriage and early childbearing [6]. Numerous studies have established a close link between fertility aspirations and fertility behavior; invariably, these studies have found that fertility intentions-ideal family size and desire for additional children-strongly predict future reproductive behavior [7–9]. According to a US study, aggregate intentions and actual fertility show rather excellent consistency, even if fertility intentions and individual behavior differ [10]. The association between fertility intentions and actual reproductive behavior is sometimes misinterpreted as implying that having a child is always the result of a logical decision by couples [11], which is erroneous due to the complex and dynamic nature of reproductive decision-making and behaviors.

Given that many pregnancies are unplanned or accidental due to non-use, misuse, or failure of contraception [9, 11], it is not always the result of rational action that leads to pregnancy. Instead, individual, social, and demographic factors appear to play significant roles in reproductive goals and decisions based on empirical evidence of the relationship between childbearing intentions and behavior. The dynamics between spouses and the position of women within familial or societal contexts may significantly influence fertility decision-making. Gender equality, particularly between spouses, stemming from women's enhanced decision-making capacity, also known as empowerment, is a crucial factor in delineating this authority [12, 13]. In low- and middle-income countries, the advancement of gender equality and women's empowerment has grown to be a significant part of social programs and is increasingly acknowledged both as crucial in its own right and essential for economic growth and development [14]. Evidence indicates that enhanced women's empowerment can augment household efficiency, elevate family welfare, promote contraceptive utilization, and reduce undesired fertility [15–19].

Research regarding the correlation between women's empowerment and fertility intentions primarily concentrates on the concept of ideal family size [20-27]. Research examining the link between women's empowerment and general childbearing intentions-desire to have a first or subsequent child, regardless of timing or quantity [28]—has indicated an inverse relationship for certain empowerment measures while also yielding non-significant results in other instances [19, 25, 29-33]. Amin et al. [30] evaluated women's empowerment using several indices and discovered that the likelihood of desiring no further children increased with a greater mobility index and decreased with a higher aspiration index. Steele and colleagues conducted a separate study in Bangladesh where they observed an inverse correlation between household decision-making and the desire for additional children, but no correlation with the degree of mobility [32]. Another recent study in sub-Saharan Africa found that women who did not independently make household decisions were more likely to desire additional children [29].

A contextual-level study conducted in India explored the association between women's empowerment and the desire for additional children, revealing conflicting results between individual and community-level measures [19]. At the individual level, a higher score on a mobility index correlated with a desire for no additional children; conversely, at the community level, findings indicated that women residing in areas of greater mobility were less likely to express a wish to cease childbearing [19]. The authors were unable to elucidate the preference for increased fertility among women in regions where they had significant freedom of movement. The findings regarding the correlation between women's empowerment and the desire for more children are varied, with research using various indicators to assess empowerment, including involvement in family decision-making,

freedom of movement, and the justification of domestic violence. Scholars acknowledge that empowerment is a complex, relational, and diverse concept that emerges in various forms; nevertheless, there is no consensus on its measurement or the most critical dimensions and indicators [34, 35]. Additionally, there is disagreement about how to evaluate fertility intention, which has been shown to be a complex idea with several components that concentrate on various aspects of the fertility process [36, 37]. Previous research indicates that a person's desire for children varies over their lives [38, 39]. First-birth experiences, partner impact, or educational and professional pathways link these changes. Therefore, additional research is necessary to gain a more comprehensive understanding of the potential connections between women's fertility intentions, particularly their desire for additional children, and various constructs of women's empowerment.

Despite the heightened urgency for women's empowerment in South Asia, which has had some of the world's highest economic growth rates in recent decades, the majority of women continue to grapple with patriarchal ideals and gender conventions that favor men [40]. Plans for childbearing may be particularly dynamic and sensitive to short-term events given the high levels of social, economic, and demographic uncertainty in the South Asian region. However, even within this context, the measurement of the desire to avoid more children holds significance: it forecasts individual fertility and contraceptive practices in the short to medium term and correlates with temporal changes and cross-national variations at the aggregate level. Therefore, this study seeks to examine the relationship between women's empowerment and the desire to have additional children among reproductive-aged South Asian women using pooled and disaggregated analyses. The research hypotheses posit that increased women's empowerment correlates with a reduced desire to have more children. In this study, we aim to assess women's empowerment using a recently constructed and validated survey-based women's empowerment (SWPER) index, developed using various indicators and operationalized in the African context, drawing from Demographic and Health Surveys (DHS) [35, 41]. Findings of this study will help identify the potential target groups of women for family planning services and may also provide a basis for integrating specific programs for women into national development plans in South Asia.

## Methods

### **Data sources**

This study extracted the most recent nationally representative standard demographic and health survey (DHS) data from five South Asian countries: Afghanistan, Bangladesh, India, Nepal, and Pakistan. The DHS Program monitors and evaluates population, health, and nutrition programs in low-and-middle-income countries (LMICs) by collecting fertility, family planning, and health data every five years. Using comparable standard model questions, the DHS gathers information from participating nations. The survey designs utilize stratified multistage sampling, with each country segmented into administrative regions. The population in these regions is thereafter categorized into urban and rural places of residence. A random selection of enumeration areas, or primary sampling units (PSUs), is conducted within rural and urban regions. PSUs are chosen according to probability proportionate to population size utilizing the most recent census data. In most of the countries, a PSU corresponds to the smallest administrative geographic unit, such as a village. During the second stage of sampling, all houses within a PSU are enumerated based on the latest population census, and roughly 30 households per PSU are randomly chosen for an interview. All members of each sampled household are listed and possess an equal probability of selection. The methodology employed by the DHS has been documented in other sources [42]. Respondents with missing values for women's empowerment, fertility preferences, or control variables are removed in a listwise manner. This study analyzed pooled data from 61,027 currently married, fecund, non-sterilized, non-pregnant South Asian women aged 15-49 years who were living with their husbands and had at least one child. Sample sizes by country are listed in Table 1.

# **Dependent variable**

#### Desire for additional children

In the DHS, the inquiry regarding the desire for an additional child posed to women aged 15-49 was consistently phrased as: "Would you like to have (another) child, or would you prefer not to have any (more) children?". The possible responses include: '(want to) have another child', 'no more', 'can't be pregnant', 'do not know'. If a woman indicated her want to have an additional child, she was inquired about her preferred timeframe for childbirth, measured in months or years. Utilizing these responses and data regarding women's fecundity and potential sterilization of the respondent and her partner, a parameter was developed in DHS databases with the following interpretations: (i) wants within 2 years; (ii) wants after 2 or more years; (iii) wants unsure timing; (iv) undecided; (v) wants no more; (vi) sterilized (respondent or partner); (vii) declared infecund. Women who were sterilized and pronounced infertile were excluded. The respondents who were undecided are combined with those who desired an additional child. According to a study on fertility intentions, respondents who were undecided

	Standard DHS year	Total women aged 15–49 years surveyed	Number of women excluded	Final analysis sample	Sam- ple (%)
Afghanistan	2015	29,461	16,465	12,996	21.3
Bangladesh	2022	20,127	8,586	11,541	19.0
India	2019–21	7,24,115	6,97,908	26,207	42.9
Nepal	2022	14,845	10,750	4,095	6.7
Pakistan	2017-18	15,068	8,880	6,188	10.1
Pooled				61,027	

### Table 1 Selection of study sample

Note: DHS, Demographic and Health Survey

exhibited similarities in their characteristics to those who desired additional children and did not express a distinct intention to discontinue childbearing [43]. Incorporating uncertain responses in the study is important, as they account for 10.1% of the total responses. Consequently, we amalgamated responses (i), (ii), (iii), and (iv) to generate women's desire for additional children. Therefore, the dependent variable, desire for additional children, was classified dichotomously as 1 for yes and 0 for no.

### Independent variable

The SWPER global index was utilized to assess women's empowerment, serving as an individual-level indicator for women aged 15-49 who are married or in a union [41]. The SWPER was originally designed and validated for application in African nations using Demographic Health Surveys (DHS) [35], and it was subsequently revised for worldwide applicability [41]. SWPER defines women's empowerment through three domains: (a) attitude towards violence, which reflects women's intrinsic agency as demonstrated by their gender beliefs and perspectives on their husband's use of violence; (b) social independence, which signifies the enabling conditions that empower a woman to advocate for herself and acquire greater power (e.g., education and access to information); (c) decision-making, which denotes instrumental agency or the capacity to make independent choices. A comprehensive discussion of the SWPER index and its validity can be found in other sources [35, 41]. We retrieved 14 items from the DHS and calculated the scores for each domain utilizing the factor loadings provided by the authors of this index [41]. The scores were standardized, with positive values indicating aboveaverage empowerment and negative values indicating below-average. A value of zero indicates that the woman possesses an average level of empowerment relative to the cohort of low- and middle-income countries utilized to develop the index. Additional Table 1 lists the items and their coding schemes. We utilized the suggested cut-off points established by the authors [41], which classify global scores into tertiles. We classified the SWPER domain into low, medium, or high levels of empowerment using the suggested threshold values.

### **Control variables**

The SWPER index development encompassed numerous socio-demographic variables; consequently, the control variables in this study were restricted to individual-level factors, including current age (15-24, 25-34, and 35-49 years), number of living children (1, 2, and  $\geq$  3), perceived ideal number of children (0–2, 3–4, and  $\geq$ 5), working status (yes or no), and contextual-level variables such as wealth index (poorest, poorer, middle, richer, and richest) and place of residence (urban or rural). We selected these covariates based on prior research concerning the characteristics linked to fertility intentions [20, 23, 24, 29, 32, 44-46]. The DHS household wealth index was created using principal component analysis, which took into account household ownership of assets and amenities to provide a composite measure of a household's total living standards. The quintiles of the wealth index were developed using survey data to provide information on relative wealth within a country.

### Statistical analysis

We aggregated the data from the five countries to ascertain the weighted prevalence of women expressing a desire for additional children, taking into account various sociodemographic characteristics. We employed the variable "V005" (representing women's individual standard weight) as a relative weight, normalized to tailor the procedure to the specific survey context. In order to pool the data from the five countries, we undertook the denormalization of the women's individual standard weight variable by dividing this weight by the sampling fraction pertinent to each specific survey. The equation for the denormalized weight variable is as follows: female adjusted weight =  $V005 \times (total females aged 15-49 years$ in the country at the time of the survey) / (number of women aged 15–49 years interviewed in the survey) [47]. We additionally devised a distinctive cluster variable through the amalgamation of country and cluster numbers. The aggregate weight at the population level and the

distinctive cluster were employed to derive the pooled estimates. Initially, we employed weighted descriptive analysis to assess the distribution of the respondents' background characteristics. We employed a weighted descriptive analysis for SWPER and the desire for additional children. We utilized sampling weights pertinent to each country for giving country-specific estimates. Chi-square tests were used to assess proportional differences in fertility intention based on women's empowerment domains and other variables. The svy command in Stata 14 was employed to address complex survey design and the generalizability of the results.

There is a hierarchy in the DHS data. Women are therefore nested inside clusters, and we expect that women in the same cluster will likely be more alike than women in different regions of the nation. This suggests that the variability between clusters needs to be considered in more complex models. Consequently, multilevel mixedeffect logistic regression analysis was used to examine the relationship between women's empowerment and

**Table 2** Sample characteristics and distribution of desire for more children by women empowerment and other variables in South Asia (n = 61,074)

Characteristics	Number	Percent <sup>a</sup>	95% CI
Age			
15–24	12,699	21.8	21.3-22.3
25–34	25,122	41.1	40.5–41.7
35–49	23,206	37.1	36.5-37.7
Number of living children			
1	13,389	23.4	22.8–23.9
2	18,922	31.6	30.9–32.2
≥3	28,716	45.1	44.3–45.9
Ideal number of children			
0–2	31,823	55.0	53.9–56.1
3–4	17,662	27.7	27.0-28.4
≥5	11,542	17.3	16.4–18.3
Currently working			
No	46,039	75.5	74.8–76.2
Yes	14,988	24.5	23.8–25.2
Modern contraceptive use			
No	35,198	56.7	55.8–57.5
Yes	25,829	43.3	42.5–44.2
Wealth Index			
Poorest	13,556	20.4	19.7–21.2
Poorer	13,313	20.3	19.7–20.9
Middle	11,847	19.3	18.7–20.0
Richer	11,452	19.4	18.7-20.1
Richest	10,859	20.5	19.5–21.6
Place of residence			
Urban	19,432	33.6	32.2–35.0
Rural	41,595	66.4	65.0–67.8

Note: CI; confidence interval

<sup>a</sup>In estimating percentages, the complex survey design and sampling weights were taken into account. Percentages may not total 100.0 because of rounding

fertility intentions. The fixed effects results are interpreted as odds ratios (ORs) accompanied by a 95% confidence interval. Random effects were evaluated using the intraclass correlation (ICC), median odds ratio (MOR), and proportional change in variance (PCV). Model comparisons were conducted utilizing the log-likelihood ratio (LLR) and Akaike's Information Criterion (AIC) tests. The ICC, MOR, and PCV were computed using the formulas:

$$ICC = \frac{V_A}{V_A + 3.29}, MOR = e^{0.95\sqrt{V_A}}$$
  
and  $PCV = \frac{V_{null} - V_B}{V_{null}} [48],$ 

where,  $\rm V_A$  is a rea-level variance,  $\rm V_{null}$  represents the variance of the null model, and  $\rm V_B$  represents area variance of the model with more terms.

We implemented four distinct nested models for South Asia and its particular countries. Initially, we developed an empty model that had only the outcome variable. We subsequently incorporated individual-level characteristics in Model I and contextual-level variables in Model II. All factors at both the individual and contextual levels were included in the final model (Model III). The final model (Model III) was presented in this study due to its maximum LLR and lowest AIC value (Additional Table 2). Prior to performing multivariable analysis, multicollinearity among variables was evaluated using the variance inflation factor (VIF), with all variables demonstrating low VIF values (<3), signifying an absence of multicollinearity [49]. All statistical analyses were performed utilizing STATA (version 14.0), and descriptive analyses were evaluated using two-sided tests. All statistical inferences were conducted at a significance level of 0.05.

### Results

# Background characteristics and empowerment aspects of women in South Asia

Table 2 delineates the background features of South Asian women. The majority of respondents in South Asia were younger: 21.8% were aged 15–24, and 41.1% were aged 25–34. Approximately 45.1% of the women had three or more living children, while 55% of the respondents indicated that their preferred ideal number of children was 0–2. At the time of the survey, approximately 20% of women had engaged in working, 43.3% used modern contraception, and the majority (66.4%) lived in rural regions.

Figure 1 illustrates the percentages of women's empowerment across each domain (attitudes towards violence, social independence, and decision-making) among currently married women in South Asia. Approximately



Fig. 1 Percentages of different domains of women empowerment in South Asia assessed by the survey-based women's empowerment (SWPER) index

35% of South Asian women reported high empowerment concerning attitudes towards violence, while 21.3% indicated empowerment in the domain of social independence and 56.2% in the decision-making domain. At the national level, the data reveals that the percentage of women exhibiting high empowerment across all domains is notably lowest in Afghanistan, with figures of 5.7% for attitudes towards violence, 4.4% for social independence, and 31.7% for decision-making. In contrast, Bangladesh shows the highest prevalence in attitudes towards violence at 56.2%, while India leads in social independence at 31% and decision-making at 72.2%. The proportion of high empowerment across all three dimensions of the SWPER is higher among women from the wealthiest household wealth index (Additional Fig. 1).

# Differentials of desiring additional children by women's empowerment and other sociodemographic variables

Table 3 presents the percentage of women desiring additional children, categorized by various domains of women's empowerment and other sociodemographic variables in South Asia. Approximately one-third of South Asian women (31.1%) with at least one child expressed a desire for additional children, with the lowest percentage in Nepal (19.4%) and the highest in Afghanistan (42.3%). In comparison to highly empowered women, a greater percentage of lowly empowered women expressed a desire for additional children concerning the attitude towards violence (36% vs. 32.6%; p < 0.001) and the decision-making (41.6% vs. 26.6%; p < 0.001) domains. However, the desire for additional children was greater among highly empowered women compared to their less empowered counterparts in the social independence area in South Asia (34.2% vs. 24.7%; p<0.001). We observed similar trends in all the respective countries. Younger women, those with only one live child, those who aspired to have four or more children as an ideal, those not utilizing modern contraception, those who were unemployed, and those residing in rural areas had a greater desire for more children than their respective counterparts.

# Determinants of desire for additional children

Table 4 presents the outcomes of a multilevel logistic regression analysis examining the correlation between women's empowerment and the desire for additional children. After adjusting for other sociodemographic factors, the likelihood of desiring additional children reduced among women with medium (adjusted odds **Table 3** Distribution of desire for more children among women aged 15 – 49 year by women's empowerment and other variables in South Asia (pooled sample) and by country

Characteristics	Desire for more children							
	South Asia (n=61,027)	Afghanistan ( <i>n</i> = 12,996)	Bangladesh ( <i>n</i> = 11,541)	India ( <i>n</i> =26,207)	Nepal (n=4,095)	Pakistan ( <i>n</i> = 6,188)		
	No. (% <sup>a</sup> )	No. (% <sup>a</sup> )	No. (% <sup>a</sup> )	No. (% <sup>a</sup> )	No. (% <sup>a</sup> )	No. (% <sup>a</sup> )		
Attitude towards violence								
Low	8,298 (36.0)	4,476 (43.0)	453 (33.7)	2,016 (31.3)	133 (20.6)	1,220 (41.5)		
Medium	3,306 (21.2)	425 (33.0)	562 (28.0)	1,594 (20.3)	175 (11.1)	550 (33.9)		
High	6,850 (32.6)	297 (50.9)	2,158 (27.5)	3,395 (27.6)	467 (26.5)	533 (36.1)		
<i>p</i> -value <sup>a</sup>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002		
Social independence								
Low	5,119 (24.7)	2,476 (38.1)	744 (17.4)	964 (15.3)	149 (11.8)	786 (32.6)		
Medium	8,956 (34.8)	2,482 (46.8)	1,324 (32.3)	3,690 (30.7)	340 (19.4)	1,120 (41.5)		
High	4,379 (34.2)	240 (50.5)	1,105 (38.2)	2,351 (31.9)	286 (28.5)	397 (37.8)		
<i>p</i> -value <sup>b</sup>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Decision-making								
Low	4,965 (41.6)	2,197 (49.1)	553 (35.2)	901 (32.7)	178 (31.4)	1,136 (44.9)		
Medium	4,441 (31.1)	1,453 (41.6)	901 (29.7)	1,199 (30.9)	318 (19.6)	570 (36.3)		
High	9,048 (26.6)	1,548 (35.4)	1,719 (25.7)	4,905 (25.6)	279 (15.3)	597 (31.3)		
<i>p</i> -value <sup>b</sup>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Age								
15–24	8,474 (67.9)	2,154 (70.0)	1,709 (71.1)	3,365 (65.7)	438 (55.7)	808 (74.3)		
25–34	8,301 (33.5)	2,452 (47.7)	1,242 (28.8)	3,183 (28.2)	300 (20.3)	1,124 (43.3)		
35–49	1,679 (6.9)	592 (14.0)	222 (4.7)	457 (4.2)	37(2.4)	371 (13.7)		
<i>p</i> -value <sup>b</sup>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Number of living children								
1	9,375 (70.0)	1,235 (81.5)	2,222 (79.9)	4.651 (64.1)	554 (58.4)	713 (84.0)		
2	4,563 (23.9)	1,207 (67.7)	815 (17.4)	1,661 (15.8)	169 (10.3)	711 (66.2)		
≥3	4,516 (16.0)	2,756 (30.4)	136 (3.5)	693 (6.5)	52 (3.6)	879 (19.1)		
<i>p</i> -value <sup>b</sup>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
Ideal number of children								
0–2	8,281 (27.1)	108 (16.1)	2,354 (27.7)	4,892 (28.5)	651 (20.1)	270 (28.0)		
3	5,351 (31.7)	1,376 (41.5)	803 (29.1)	1,920 (24.5)	112 (17.0)	1,134 (40.5)		
≥4	4,822 (43.2)	3,714 (45.5)	16 (16.4)	193 (16.6)	12 (36.0)	899 (39.4)		
<i>p</i> -value <sup>b</sup>	< 0.001	< 0.001	0.045	< 0.001	< 0.001	< 0.001		
Modern contraceptive use								
No	11,707 (34.1)	3,832 (43.9)	1,107 (30.4)	4,396 (28.6)	503 (25.8)	1,869 (41.9)		
Yes	6,447 (27.1)	1,366 (39.1)	2,066 (26.8)	2,609 (25.4)	272 (12.9)	434 (26.4)		
<i>p</i> -value <sup>b</sup>	< 0.001	0.031	0.001	0.001	< 0.001	< 0.001		
Currently working								
No	14,937 (33.5)	4,681 (42.2)	2,326 (31.1)	5,576 (28.4)	338 (28.3)	2,016 (38.5)		
Yes	3,517 (23.8)	517 (42.1)	847 (22.2)	1,429 (23.4)	437 (15.0)	287 (34.3)		
<i>p</i> -value <sup>b</sup>	< 0.001	0.956	< 0.001	< 0.001	< 0.001	0.094		
Wealth Index								
Poorest	4,038 (30.4)	947 (40.8)	592 (25.3)	1,751 (27.7)	212 (16.7)	536 (41.9)		
Poorer	4,004 (30.8)	1,081 (43.6)	625 (26.8)	1,610 (26.7)	156 (19.0)	532 (39.2)		
Middle	3,831 (32.9)	1,196 (45.5)	660 (28.9)	1,376 (28.9)	153 (21.1)	446 (37.7)		
Richer	3,561 (32.2)	1,165 (44.0)	642 (28.9)	1,209 (27.3)	145 (21.6)	400 (38.9)		
Richest	3,020 (29.6)	809 (38.4)	654 (30.0)	1,059 (26.1)	109 (18.7)	389 (30.5)		
<i>p</i> -value <sup>b</sup>	0.008	0.110	0.016	0.188	0.175	0.006		
Place of residence								
Urban	5,487 (28.4)	1,213 (37.0)	1,156 (30.1)	1,586 (25.2)	418 (20.4)	1,114 (34.3)		
Rural	12,967 (32.5)	3,985 (44.3)	2,017 (27.1)	5,419 (28.3)	357 (17.5)	1,189 (39.9)		

## Table 3 (continued)

Characteristics	Desire for more children						
	South Asia ( <i>n</i> = 61,027) No. (% <sup>a</sup> )	Afghanistan ( <i>n</i> = 12,996) No. (% <sup>a</sup> )	Bangladesh ( <i>n</i> = 11,541) No. (% <sup>a</sup> )	India ( <i>n</i> =26,207)	Nepal ( <i>n</i> = 4,095) No. (% <sup>a</sup> )	Pakistan ( <i>n</i> = 6,188) No. (% <sup>a</sup> )	
				No. (% <sup>a</sup> )			
<i>p</i> -value <sup>b</sup>	< 0.001	0.003	0.022	0.001	0.036	0.006	
Total	18,454 (31.1)	5,198 (42.3)	3,173 (28.0)	7,005 (27.3)	775 (19.4)	2,303 (37.8)	

Note: Percentages may not total 100.0 because of rounding

<sup>a</sup>In estimating percentages, the complex survey design and sampling weights were taken into account

 $^{b}p$ -values were derived using a  $\chi^{2}$  test

Table 4 Multilevel logistic regression results of the relationship between women's empowerment and desire for more children among reproductive aged women in South Asia

Characteristics	Desire for more children							
	South Asia AOR <sup>a</sup> (95%)	Afghanistan AOR <sup>b</sup> (95%)	Bangladesh AOR <sup>b</sup> (95%)	India AOR <sup>b</sup> (95%)	Nepal AOR <sup>b</sup> (95%)	Pakistan AOR <sup>b</sup> (95%)		
Attitude towards violence								
Low	1	1	1	1	1	1		
Medium	0.79 (0.74–0.84)	0.58 (0.50–0.68)	0.73 (0.58–0.91)	0.95 (0.85–1.07)	0.93 (0.66–1.32)	0.80 (0.66–0.96)		
High	0.81 (0.74–0.88)	0.99 (0.63–1.55)	0.84 (0.68–0.99)	0.78 (0.68–0.89)	0.89 (0.71–0.99)	0.60 (0.44–0.82)		
Social independence								
Low	1	1	1	1	1	1		
Medium	1.60 (1.51–1.70)	1.66 (1.51–1.83)	1.49 (1.24–1.72)	1.64 (1.45–1.83)	1.01 (0.75–1.37)	1.60 (1.36–1.88)		
High	1.59 (1.44–1.74)	1.58 (0.96–2.60)	1.30 (1.10–1.56)	1.75 (1.48–2.07)	1.14 (0.77–1.68)	2.21 (1.52–3.14)		
Decision-making								
Low	1	1	1	1	1	1		
Medium	0.97 (0.90-1.04)	0.89 (0.79–0.99)	0.86 (0.72-1.02)	1.05 (0.90–1.23)	0.81 (0.59–1.11)	0.90 (0.73–1.05)		
High	0.88 (0.83–0.94)	0.73 (0.65–0.82)	0.88 (0.73–0.99)	0.99 (0.87–1.12)	0.76 (0.58–0.98)	0.74 (0.63–0.91)		

Note: AOR, Adjusted odds ratio; 95% CI, 95% Confidence interval

<sup>a</sup>Model was adjusted for age, number of living children, ideal number of children, current working status, modern contraceptive use, wealth index, place of residence, and individual country

<sup>b</sup>Model was adjusted for age, number of living children, ideal number of children, current working status, modern contraceptive use, wealth index, place of residence

ratio [AOR]: 0.79; 95% confidence interval [CI]: 0.74– 0.84) and high (AOR: 0.81; 95% CI: 0.74–0.88) empowerment in the context of attitudes towards violence, as well as among highly empowered women (AOR: 0.88; 95% CI: 0.83–0.94) regarding decision-making, compared to their lowly empowered counterparts in South Asia. Individual countries observed similar reduced odds among highly empowered women in these two domains. Conversely, the social independence domain in South Asia, as well as in individual countries, exhibits a contrast to the other two domains. For example, in South Asia, women with medium (AOR: 1.60; 95% CI: 1.51–1.70) and high (AOR: 1.59; 95% CI: 1.44–1.74) empowerment levels were more inclined to seek an additional child compared to those with low empowerment.

# Discussion

This study sought to elucidate the relationship between women's empowerment and the desire for additional children among reproductive-aged women in South Asia, an area characterized by entrenched patriarchy. The results of the study indicated that 31.1% of South Asian women with at least one child expressed a desire for more children, which is consistent with other single-country research in South Asia [50–54]. Nonetheless, it is lower than the findings from studies conducted in sub-Saharan African nations [29, 55]. The reduced inclination for further children in South Asia, as opposed to sub-Saharan Africa, is evidenced by the fertility rates in these two regions: the total fertility rate in the South Asian region was 2.07 in 2021, while in sub-Saharan Africa it was 4.29 [2]. The findings of this study reveal that women with high empowerment regarding attitudes towards violence and decision-making had a reduced desire for more children, whereas those with strong empowerment concerning social independence showed an increased likelihood of desiring more children. While the findings of this analysis generally align with expectations, there are instances of contradictory results. Nevertheless, comprehending the relationship between women's empowerment and the desire for more children is essential for informing future fertility patterns and the development of family planning initiatives in South Asia.

Findings of this study indicate that greater empowerment in two of three domains-attitude toward violence and decision-making-correlates with a decreased desire for further children, which is aligned with the existing literature [19, 25, 29–33]. These findings reinforced the critical importance of women's empowerment in influencing the desire for more children in South Asian contexts. Empowerment, frequently manifested through decision-making, is a crucial aspect of individual agency and can take various forms, including motivation, negotiation, contemplation, or the capacity to establish and pursue personal goals and choices [56]. In this context, women's attainment of increased decision-making authority within the marital domain represents a significant factor for equitable gender relations between partners [13]. Empowering women can instigate normative transformations in gender relations and the regulations controlling women's conduct inside the household and the broader community [57]. These changes entail corresponding alterations in men's behavior towards women, including decisions regarding reproduction and contraceptive use. In South Asian contexts, familial structures and gender norms frequently restrict women's autonomy, decision-making authority, and mobility across various domains. The legacy of male dominance and authority significantly influences gender relations, with husbands believing they should determine the timing and number of children their wives bear, while women refrain from discussing fertility and reproductive rules with their husbands due to fear of violence [58, 59]. In such contexts, this study's findings have significant implications for future reproductive trends, highlighting that empowering women is a crucial component influencing their fertility desires.

This study revealed an unexpected finding: highly empowered women regarding social independence exhibited a greater propensity to desire extra children. We anticipated that women's empowerment fosters independence in society, enabling women to transcend social conventions rooted in profound natalist attitudes and early marriage. A plausible explanation for the positive relationship found in this study could be that highly empowered women in this domain predominantly belong to a higher socioeconomic category, potentially rendering them less apprehensive about having an additional child. A further aspect that might explain this outcome is that highly empowered women in this domain, who are expected to have low fertility, may feel compelled to increase their fertility levels to alleviate any dissatisfaction over the gender composition of their offspring [23]. Moreover, some research has indicated a positive correlation between fertility intentions-ideal family size or the desire for additional children—and educational achievement [1, 28], which is a variable in the formulation of the social independence domain. The positive correlation between education and intention may stem from better-educated women possessing enhanced economic security through paid labor, enabling them to finance a larger number of children. Our results also suggested that working women were more inclined to seek more

children compared to their non-working peers. In addition, this unforeseen finding might also be due to the reduced robustness in constructing this domain of women's empowerment in this region. Further studies are suggested to better understand the relationship between the social independence domain and fertility intentions.

This study investigates five South Asian countries using a standardized methodology and questionnaire, allowing for a comprehensive understanding of the issue through combined findings and country-specific estimations. Typically, previous research on women's empowerment and the desire for additional children focuses on a specific geographic community or a single country [19, 25, 30–33]. However, a published study involving the largest number of countries (32 countries from sub-Saharan Africa) partially corroborated our investigation's findings [29]. The application of a validated and standardized metric of women's empowerment, the SWPER worldwide [41], facilitated this comprehensive assessment across five countries.

Several limitations must be acknowledged. Women's empowerment is a multifaceted notion intricately linked to cultural norms, which can be challenging to comprehensively and effectively assess; yet, despite its imperfections, the SWPER index remains a reliable, validated individual-level assessment available. Secondly, a fundamental drawback of the SWPER index is its lack of comprehensiveness, as it solely depends on data collected by the DHS and fails to assess women's empowerment as a process. Third, the retrospective nature of data reporting means that recall biases are likely to influence the data. Furthermore, we cannot dismiss the potential for social desirability bias. Ultimately, owing to the cross-sectional character of the data, we are unable to draw causal implications regarding the relationship between women's empowerment and the desire to have additional children.

Despite these limitations, the study's findings hold significant implications for the fertility and health sectors, where the empowerment of women acts as a catalyst for positive behaviors related to reproductive health and bolsters negotiation and communication regarding their fertility plans. Considering the negative impacts of high fertility on women's reproductive health, empowered women may develop strategies to avoid unintended pregnancies through the enhancement of contraceptive practices. The institutions responsible for family planning programs in South Asian countries predominantly emphasize clinical and hospital-based approaches, which are further enhanced by the deployment of trained field health workers. However, there is a crucial need to incorporate women's empowerment as a vital factor in achieving desired fertility. In light of the identified negative correlation between attitudes towards violence and the inclination for having more children, it is imperative to enhance initiatives aimed at addressing gender-based violence. Initiatives focused on education and community engagement can be established to confront societal norms that permit violence against women. Enhancing decision-making in households over reduced desire for having more children, along with advancing reproductive health, is essential. It is essential for policies and programs to prioritize enhancing women's access to education, economic opportunities, and resources. Enabling women to make knowledgeable decisions regarding their reproductive health can help them manage their fertility at a level they choose. Authorities can work together with educational institutions and community organizations to develop empowerment programs specifically designed to meet the needs of women. Additionally, as a potential policy approach, it might be helpful to consider women empowerment initiatives that focus on enhancing control over family resources, access to credit, and other institutional supports to mitigate reliance on their spouses.

# Conclusion

The study has highlighted that psychological dispositions such as desires, intentions, or aspirations, similar to fertility behavior, are not completely independent of the broader familial, community, and societal contexts in which individuals function. This study found that certain aspects of women's empowerment significantly reduce their desire for additional children in conservative South Asian contexts, thereby enhancing women's capacity to attain their fertility objectives, which is essential for advancing their reproductive rights [60]. Government population policies in this region should prioritize women's empowerment, as enhanced empowerment encourages women's participation in familial decision-making and promotes their rejection of domestic violence, thus fostering equitable negotiation dynamics between partners and facilitating regular discussions on fertility and its regulation. Public health interventions focused on fertility control as well as those aimed at designing or fortifying current fertility programs in South Asia should meticulously evaluate and invest in women's empowerment through development initiatives.

### Supplementary Information

The online version contains supplementary material available at https://doi.or g/10.1186/s12889-025-23000-y.

Supplementary Material 1

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#### Author contributions

MMR conceptualized, initiated the study, curation of data, conducted data analysis, drafted the manuscript. AJ offered advice, critical comments, and edited the draft manuscript. All the authors read and approved the final manuscript.

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#### Data availability

The datasets supporting the conclusions of this article are available in the MEASURE DHS at https://dhsprogram.com/data/available-datasets.cfm.

### Declarations

#### **Conflict of interest**

The authors declare that they have no known competing interests that could have appeared to influence the work reported in this paper.

#### Human ethics and consent to participate declarations

The present investigation employed a secondary data analysis of the Demographic and Health Surveys (DHS). DHS received approval from the ICF Institutional Review Board (IRB) ethics committee, United States, and the National Ethical Review Committees in Afghanistan, Bangladesh, India, Nepal, and Pakistan. Before participation, each participant provided informed consent, and all information was collected confidentially. MEASURE DHS granted us formal authorization and raw survey data for utilization. The dataset remained confidential and was not shared nor provided to any other entity. This study is not an experiment. All procedures were executed in accordance with the Helsinki declarations. Additional information concerning DHS data and ethical standards can be found online at (http://www.dhsprog ram.com).

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