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Traditional Contraceptive Use among Married Women in Indonesia: A Nationally Representative Analysis of the 2017 Indonesia Demographic and Health Survey

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Abstract

Background

Traditional contraceptive methods remain part of contraceptive practice in Indonesia. This study estimated their prevalence and examined associated demographic, reproductive, socioeconomic, and geographic characteristics.

Methods

We analyzed nationally representative data from the 2017 Indonesia Demographic and Health Survey. The analysis included currently married/in-union women aged 15–49 years using modern or traditional contraception. Survey-weighted logistic regression estimated adjusted odds ratios (AoRs) and 95% confidence intervals (CIs), accounting for the complex survey design.

Results

Among 20,921 contraceptive users, 10.1% (95% CI: 9.5–10.7) used traditional methods. Withdrawal accounted for 65.9% of traditional method use, followed by periodic abstinence (29.8%). Compared with women aged 15–24 years, the odds of traditional rather than modern method use were higher among those aged 25–34 years (AoR 1.40, 95% CI: 1.10–1.77) and 35–49 years (AoR 1.80, 95% CI: 1.41–2.30). Higher odds were also observed among women with secondary (AoR 2.02, 95% CI: 1.16–3.52) or higher education (AoR 3.80, 95% CI: 2.16–6.70) and ≥ 5 children (AoR 2.00, 95% CI: 1.60–2.49). Rural residence was associated with lower odds (AoR 0.73, 95% CI: 0.64–0.84). Wealth and region were not significant after adjustment.

Conclusions

Traditional method use was associated with age, education, residence, and high parity. These associations characterize population-level patterns but do not establish the motivations or constraints underlying contraceptive method choice.

Background

Family planning is a fundamental component of reproductive health and contributes to reducing unintended pregnancies, unsafe abortions, and maternal and infant morbidity and mortality, while supporting women's social and economic well-being [1–5]. Globally, contraceptive use has played an important role in improving reproductive health outcomes. In 2012, contraceptive use was estimated to have prevented more than 200 million unintended pregnancies and approximately 118,000 maternal

deaths [3]. Nevertheless, substantial variation in contraceptive coverage and method mix persists across countries, socioeconomic groups, and geographic settings [5, 6].

Although access to modern contraception has expanded substantially in low- and middle-income countries (LMICs), traditional contraceptive methods continue to be used by a considerable number of women [7, 8]. Traditional methods, such as withdrawal and periodic abstinence, generally have higher typical-use failure rates than many modern contraceptive methods and may therefore be associated with a greater risk of unintended pregnancy when not used consistently or correctly [7, 8]. Their continued use remains relevant to reproductive health and family planning programs. However, the use of traditional methods should not automatically be interpreted as evidence of inadequate access to modern contraception. Contraceptive method use may reflect multiple and potentially overlapping circumstances, including reproductive intentions, previous contraceptive experiences, concerns about side effects, health considerations, socioeconomic circumstances, cultural or religious beliefs, personal preferences, and barriers to obtaining acceptable contraceptive options [9–11].

Indonesia provides an important setting in which to examine these patterns. The country has implemented one of the world's largest and longest-running national family planning programs. Historically coordinated by the National Population and Family Planning Board (BKKBN), the institutional structure was reorganized in 2024 with the establishment of the Ministry of Population and Family Development (*Kementerian Kependudukan dan Pembangunan Keluarga/Kemendukbangga*) alongside BKKBN. Under the current institutional arrangement, national population and family development policies, including population control and family planning programs, are implemented within this reorganized institutional structure [12]. Indonesia has also experienced a substantial fertility decline over recent decades, with the total fertility rate reaching 2.13 children per woman according to the 2025 Intercensal Population Survey (SUPAS 2025) [13]. Despite this progress, differences in contraceptive use and method mix remain across demographic, socioeconomic, and geographic groups [6, 7].

The 2017 Indonesia Demographic and Health Survey (IDHS), which provides the data for the present study, documented widespread contraceptive use among married women, with modern methods accounting for most contraceptive use and short-acting methods comprising a substantial component of the method mix; traditional methods nevertheless remained in use [10]. More recent national demographic and family planning indicators demonstrate continued fertility decline and sustained policy attention to modern contraceptive prevalence, unmet need for family planning, and contraceptive method mix [14]. These more recent indicators are important for understanding Indonesia's current reproductive health context, while the 2017 IDHS remains a nationally representative source of detailed individual-level data that permits examination of contraceptive method use in relation to demographic, reproductive, socioeconomic, and geographic characteristics.

Indonesia's geographic diversity is particularly relevant to the study of contraceptive patterns. The country comprises thousands of islands and populations distributed across markedly different geographic, socioeconomic, and health-service environments. Previous evidence has documented

subnational variation in contraceptive coverage, method mix, unmet need, and access to reproductive health services across Indonesian regions and provinces [15–17]. Such variation may coexist with differences in urbanization, socioeconomic conditions, health-system capacity, and sociocultural environments [18–20]. Geographic analysis may therefore identify spatial heterogeneity in the use of traditional methods that is not apparent from national estimates alone. However, geographic differences should not themselves be interpreted as evidence of particular cultural, behavioral, or health-system mechanisms unless these mechanisms are directly measured.

Contraceptive method use can therefore be considered within a multidimensional framework involving demographic, reproductive, socioeconomic, and geographic characteristics. Age and parity represent important dimensions of reproductive history and may distinguish women at different stages of the reproductive life course [21, 22]. Educational attainment and household wealth may be associated with differences in socioeconomic circumstances relevant to contraceptive behavior, while urban–rural residence may capture broad differences in the environments in which contraceptive decisions and service use occur [23]. Geographic location may additionally capture population-level heterogeneity across Indonesia that is not fully represented by individual socioeconomic characteristics. These domains provide a conceptual basis for examining variation in contraceptive method use without assuming that any single characteristic represents the underlying motivation for contraceptive choice.

Within this framework, traditional contraceptive use warrants specific attention. Although traditional methods generally have higher typical-use failure rates than many modern methods, their use cannot be assumed to represent either inadequate contraceptive practice or unmet need. Some women may use traditional methods because of preferences, reproductive intentions, prior experiences, concerns about modern methods, or sociocultural considerations, whereas others may have difficulty obtaining or using an acceptable modern method [24–26]. These explanations are not mutually exclusive. Importantly, information on the contraceptive method currently being used does not by itself establish whether that method reflects preference, constrained choice, limited access, or another decision-making process. Analyses of traditional contraceptive use should therefore distinguish observed population patterns from the unmeasured mechanisms that may underlie them.

Previous research in Indonesia has predominantly focused on modern contraceptive uptake, unmet need for family planning, contraceptive discontinuation, and barriers to contraceptive use [11, 12, 16]. Traditional methods have received comparatively less attention as a distinct contraceptive outcome, particularly in analyses simultaneously considering demographic, reproductive, socioeconomic, and geographic variation [10]. Consequently, the characteristics associated specifically with traditional rather than modern contraceptive method use remain incompletely characterized. This distinction is relevant because overall contraceptive prevalence may obscure substantial heterogeneity in method type, and national averages may further conceal differences across population groups and geographic areas.

Against this background, the present study examines traditional contraceptive method use as a distinct contraceptive behavior of public health relevance, without presupposing that its use represents informed

choice, unmet need, or inadequate access to modern contraception. Using nationally representative data from the 2017 IDHS, we aimed to estimate the proportion of traditional method use among currently married/in-union contraceptive users and examine the demographic, reproductive, socioeconomic, and geographic characteristics associated with traditional rather than modern contraceptive method use. We additionally describe geographic variation in traditional method use to characterize its distribution across Indonesia. By identifying population-level patterns associated with method type, the study seeks to inform family planning research and program planning while recognizing that the motivations and constraints underlying individual contraceptive choices cannot be determined from these cross-sectional data.

Methods

Study design and data source

This study was a secondary analysis of data from the 2017 Indonesia Demographic and Health Survey (IDHS), a nationally representative cross-sectional survey conducted as part of the Demographic and Health Surveys (DHS) Program. The 2017 IDHS was used because, at the time of analysis, it was the most recent publicly available Indonesian DHS dataset containing the detailed information on contraceptive method use and the demographic, reproductive, socioeconomic, and geographic characteristics required for the present study. The survey was conducted by the Central Bureau of Statistics Indonesia (BPS), the National Population and Family Planning Board (BKKBN), and the Ministry of Health, with technical assistance from ICF [10].

The 2017 IDHS used a stratified two-stage cluster sampling design designed to produce nationally representative estimates. Detailed information on the sampling frame, sample selection, questionnaires, field procedures, and data-quality assurance is provided in the 2017 IDHS Final Report [10]. Rather than reproducing these standard DHS procedures, the present section focuses on the sample selection, variable construction, and analytical procedures specific to this study.

The primary analysis used the women's Individual Recode (IR) file, which contained records for 49,627 women aged 15–49 years interviewed in the 2017 IDHS. Household socioeconomic and geographic characteristics available within the women's records were used in the analysis. Male-partner records were not included in the final analytical model because sufficiently complete and reliable matched-partner information was unavailable for the primary analytical sample.

Study population and analytical sample

The source population comprised women aged 15–49 years included in the 2017 IDHS Individual Recode file. For the present study, eligibility was restricted to women who were currently married or living in union at the time of the survey. Current union status was identified using the DHS variable v502; women coded as currently in union (v502 = 1) were eligible, whereas women who had never been in union or were formerly in union were excluded.

Of the 49,627 women in the Individual Recode file, 34,467 were currently married or in union. Among these women, 13,546 reported currently using no contraceptive method and were excluded from the primary comparative analysis. Because the primary research question concerned factors associated with use of a traditional rather than a modern contraceptive method, the analytical sample was restricted to current contraceptive users classified as using either a traditional or modern method. This resulted in an eligible analytical sample of 20,921 women, comprising 18,545 modern-method users and 2,376 traditional-method users.

Women using no contraceptive method were not included in the primary regression analysis because non-use represents a conceptually distinct contraceptive status. Combining non-users with modern-method users would have resulted in a model that compared traditional-method use with heterogeneous contraceptive statuses rather than directly examining traditional versus modern-method use. Accordingly, the regression analysis was designed to address the question of which characteristics were associated with traditional rather than modern contraceptive method use among current contraceptive users.

Outcome variable

The primary outcome was current use of a traditional rather than a modern contraceptive method among current contraceptive users. Contraceptive method type was identified using the DHS variable v313. Women classified as traditional-method users (v313 = 2) were coded as 1, whereas women classified as modern-method users (v313 = 3) were coded as 0. Traditional methods identified using the detailed current contraceptive method variable (v312) comprised withdrawal, periodic abstinence, and other traditional methods. Women reporting no contraceptive method (v313 = 0) were excluded from the primary comparative analysis.

Women reporting no current contraceptive method (v313 = 0) were excluded from the traditional-versus-modern regression analysis. Thus, the outcome estimated the odds of traditional method use relative to modern method use and should not be interpreted as an analysis of contraceptive use versus non-use.

Explanatory variables

Explanatory variables were specified *a priori* based on their conceptual relevance to contraceptive method use and evidence from previous literature. The final analytical framework focused on demographic, reproductive, socioeconomic, and geographic characteristics that were consistently available and operationalized in the 2017 IDHS Individual Recode data.

Respondent age was measured in completed years (v012) and categorized as 15–24, 25–34, and 35–49 years. Educational attainment (v106) was categorized according to the standard DHS classification as no education, primary, secondary, and higher education. Parity was derived from the total number of children ever born (v201) and categorized as 0–2, 3–4, and ≥ 5 children.

Place of residence (v025) was categorized as urban or rural. Household socioeconomic position was represented by the DHS wealth index (v190) and categorized into the standard five quintiles: poorest, poorer, middle, richer, and richest. The DHS wealth index is a household-level composite measure based on household assets and characteristics and was used as the principal indicator of relative household socioeconomic position.

Geographic location was assessed at both provincial and regional levels. The province of residence was identified using the IDHS variable v024. For the regression analysis, provinces were grouped into three broad geographic regions, Western, Central, and Eastern Indonesia, according to the prespecified classification. Provincial-level estimates were used descriptively to characterize geographic variation in traditional contraceptive method use, whereas the broader regional classification was included as a covariate in the regression models to assess whether geographic differences in traditional versus modern method use persisted after adjustment for demographic, reproductive, and socioeconomic characteristics.

Province-level estimates were also calculated to provide a descriptive visualization of geographic heterogeneity in the use of traditional methods. These provincial estimates were descriptive and were not entered simultaneously with the broader regional classification in the multivariable regression model. Accordingly, provincial variation was not interpreted as evidence of specific cultural, behavioral, health-system, or access-related mechanisms.

Variables considered in earlier versions of the analysis, including birth interval, recent birth indicators, household size, sex of the household head, access to electricity or other basic amenities, and male-partner characteristics, were not retained in the final analytical framework because they were not consistently operationalized, were not central to the final research question, or did not have adequate data coverage for robust analysis.

Handling of missing data

Completeness was assessed for the outcome and all explanatory variables included in the final analytical model. The eligible comparative sample consisted of 20,921 women using either modern or traditional contraceptive methods. For multivariable analysis, observations missing any covariate required by the final model were excluded using a complete-case analysis. No missing-value imputation was performed.

The number of observations included in the final complete-case regression model was reported separately from the eligible analytical sample where applicable. This distinction was maintained to avoid conflating exclusions based on contraceptive status with exclusions arising from missing covariate information.

Survey design and weighting

All descriptive and regression analyses accounted for the complex sampling design of the 2017 IDHS, including sampling weights, clustering, and stratification. The women's individual sampling weight (v005), stored in the DHS dataset as an integer scaled by 1,000,000, was rescaled by dividing by 1,000,000 before analysis, following DHS conventions [27]. Primary sampling units (clusters) were identified using v001, and sampling strata were specified using v022. These design elements were incorporated into all survey-weighted estimates and regression models to obtain nationally representative estimates and appropriate standard errors.

Survey-weighted estimates were used to account for unequal selection probabilities and the clustered and stratified sampling design. Weighted proportions were used for population-level descriptive estimates, and design-based standard errors were used for statistical inference. Sampling weights were applied as part of the prespecified IDHS survey design rather than based on their empirical distribution in the analytical sample.

Statistical analysis

The characteristics of the analytical sample were summarized using unweighted frequencies and survey-weighted proportions. The proportion of traditional method use was estimated among currently married/in-union women who were using either a traditional or modern contraceptive method. The survey-weighted estimate, rather than the unweighted proportion derived directly from sample counts, was treated as the primary population estimate.

Differences in categorical characteristics between traditional- and modern-method users were examined using design-adjusted tests appropriate for complex survey data. Bivariable survey-weighted logistic regression models were subsequently fitted to estimate the crude association between each explanatory variable and the use of traditional rather than modern contraceptive methods [28]. Associations were expressed as crude odds ratios (CoRs) with 95% confidence intervals (CIs).

A survey-weighted multivariable logistic regression model was fitted to estimate adjusted associations between the prespecified explanatory variables and the use of traditional versus modern contraceptive methods. The final model included age group, educational attainment, parity, place of residence, household wealth quintile, and geographic region. These variables were specified *a priori* based on conceptual relevance and prior evidence, rather than selected based on statistical significance in bivariable analyses. This approach was used to avoid data-driven variable selection based solely on arbitrary significance thresholds.

Adjusted associations were reported as adjusted odds ratios (AoRs) with 95% CIs. Statistical tests were two-sided, and a p-value < 0.05 was considered statistically significant. Because the IDHS is cross-sectional, odds ratios were interpreted as measures of association rather than causal effects, determinants, or predictors of subsequent contraceptive behavior. No inference was made regarding whether observed associations reflected contraceptive preferences, informed choice, barriers to access, or other decision-making mechanisms that were not directly measured.

All analyses were conducted using R statistical software (R Foundation for Statistical Computing, Vienna, Austria) [29]. Complex survey estimation was performed using the survey package, while data management and preparation were undertaken using *dplyr* and other packages within the *tidyverse*.

Ethical considerations

The 2017 IDHS data are de-identified and available to registered researchers following authorization by the DHS Program. The original survey obtained informed consent from participants before data collection and was conducted according to the ethical procedures established for the IDHS. Permission to access and use the de-identified dataset for the present secondary analysis was obtained from the DHS Program. Because the present study involved secondary analysis of anonymized survey data with no direct participant contact, no additional participant consent was obtained.

Results

The 2017 IDHS Individual Recode dataset included 49,627 women aged 15–49 years, of whom 34,467 were currently married or in union at the time of the survey. Among these women, 13,546 reported no current contraceptive use and were excluded from the primary comparative analysis. The eligible analytical sample therefore comprised 20,921 current contraceptive users, including 18,545 modern-method users and 2,376 traditional-method users. Based on the survey-weighted analysis, traditional contraceptive methods accounted for 10.1% (95% CI: 9.5–10.7) of contraceptive use among women using either modern or traditional methods.

Among traditional-method users, withdrawal was the most commonly reported method, accounting for 65.9% of traditional method use, followed by periodic abstinence (29.8%) and other traditional methods (4.3%) (Fig. 1).

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Traditional contraceptive method use showed geographic variation across Indonesia. To characterize this variation beyond the broad regional categories used in the regression analysis, survey-weighted proportions of traditional method use were estimated descriptively for each province. The provincial distribution is presented in Fig. 2.

Survey-weighted provincial estimates revealed geographic heterogeneity in the use of traditional contraceptive methods across Indonesia, with higher proportions in some provinces and lower in others. These provincial estimates were descriptive and were used to characterize geographic variation rather than to identify province-level determinants. The observed differences should therefore not be interpreted as evidence of specific cultural, behavioral, or health-system mechanisms, as these factors were not directly assessed in the present analysis.

Table 1
Survey-weighted characteristics by contraceptive method type

Characteristic	Modern[1]	Traditional[1]	p-value[2]
Age group (years)			< 0.001
15–24	1,931 (94%)	131 (6.1%)	
25–34	6,638 (91%)	753 (9.2%)	
35–49	9,976 (89%)	1,492 (11%)	
Residence			< 0.001
Urban	9,018 (87%)	1,494 (13%)	
Rural	9,527 (92%)	882 (7.6%)	
Education			< 0.001
No education	248 (93%)	26 (6.6%)	
Primary	6,227 (94%)	476 (6.1%)	
Secondary	9,875 (89%)	1,304 (11%)	
Higher	2,195 (80%)	570 (20%)	
Wealth index			< 0.001
Poorest	4,166 (93%)	373 (7.2%)	
Poorer	3,847 (93%)	370 (7.2%)	
Middle	3,741 (91%)	437 (9.0%)	
Richer	3,537 (89%)	527 (11%)	
Richest	3,254 (84%)	669 (16%)	
Parity			< 0.001
0–2	10,746 (90%)	1,302 (9.5%)	
3–4	6,431 (90%)	826 (10%)	
≥ 5	1,368 (85%)	248 (15%)	
Region			0.3
Western	11,829 (90%)	1,559 (10%)	
Central	5,570 (90%)	677 (9.5%)	

[2]Pearson's X^2: Rao & Scott adjustment

Characteristic	Modern[1]	Traditional[1]	p-value[2]
Eastern	1,146 (91%)	140 (8.8%)	
[1]n (unweighted) (%)			
[2]Pearson's X^2: Rao & Scott adjustment			

Values are unweighted frequencies and survey-weighted row percentages. P-values are based on Rao–Scott adjusted chi-square tests.

Table 1 presents the characteristics of currently married/in-union contraceptive users according to contraceptive method type. Traditional method use differed significantly across age groups, place of residence, educational attainment, household wealth, and parity (all Rao–Scott adjusted $p < 0.001$), whereas no statistically significant difference was observed across broad geographic regions ($p = 0.3$).

The proportion using traditional rather than modern methods increased across age groups, from 6.1% among women aged 15–24 years to 9.2% among those aged 25–34 years and 11% among those aged 35–49 years. Traditional method use was also more common among urban than rural women (13% vs 7.6%). A pronounced gradient was observed across educational levels: traditional method use accounted for 6.6% among women with no education, 6.1% among those with primary education, 11% among those with secondary education, and 20% among women with higher education.

A socioeconomic gradient was similarly observed across household wealth quintiles. The proportion using traditional methods increased from 7.2% in both the poorest and poorer quintiles to 9.0% in the middle quintile, 11% in the richer quintile, and 16% in the richest quintile. Traditional method use was also more frequent among women with higher parity, accounting for 9.5% among women with 0–2 children, 10% among those with 3–4 children, and 15% among those with five or more children. In contrast, differences across Western, Central, and Eastern Indonesia were relatively small (10%, 9.5%, and 8.8%, respectively) and were not statistically significant ($p = 0.3$)

Table 2
Factors associated with traditional rather than modern contraceptive method use

Characteristic	Crude model				Adjusted model			
	CoR	95% CI	95% CI	p-value	AoR	95% CI	95% CI	p-value
Age group (years)								
15–24	—	—	—		—	—	—	
25–34	1.57	1.24, 1.99	1.24, 1.99	< 0.001	1.40	1.10, 1.77	1.10, 1.77	0.005
35–49	1.99	1.58, 2.51	1.58, 2.51	< 0.001	1.80	1.41, 2.30	1.41, 2.30	< 0.001
Education								
No education	—	—	—		—	—	—	
Primary	0.92	0.53, 1.62	0.53, 1.62	0.781	1.07	0.61, 1.87	0.61, 1.87	0.806
Secondary	1.71	0.98, 2.97	0.98, 2.97	0.058	2.02	1.16, 3.52	1.16, 3.52	0.013
Higher	3.60	2.06, 6.30	2.06, 6.30	< 0.001	3.80	2.16, 6.70	2.16, 6.70	< 0.001
Residence								
Urban	—	—	—		—	—	—	
Rural	0.57	0.50, 0.65	0.50, 0.65	< 0.001	0.73	0.64, 0.84	0.64, 0.84	< 0.001
Wealth index								
Poorest	—	—	—		—	—	—	
Poorer	1.00	0.83, 1.21	0.83, 1.21	0.995	0.89	0.73, 1.08	0.73, 1.08	0.247
Middle	1.27	1.04, 1.54	1.04, 1.54	0.018	1.01	0.82, 1.24	0.82, 1.24	0.947
Richer	1.55	1.28, 1.88	1.28, 1.88	< 0.001	1.03	0.84, 1.28	0.84, 1.28	0.756
Richest	2.42	2.01, 2.90	2.01, 2.90	< 0.001	1.13	0.91, 1.41	0.91, 1.41	0.264
Parity								

Abbreviations: CI = Confidence Interval, OR = Odds Ratio

Characteristic	Crude model				Adjusted model			
	CoR	95% CI	95% CI	p-value	AoR	95% CI	95% CI	p-value
Age group (years)								
0–2	—	—	—		—	—	—	
3–4	1.10	0.98, 1.23	0.98, 1.23	0.102	1.05	0.93, 1.18	0.93, 1.18	0.447
≥ 5	1.69	1.39, 2.06	1.39, 2.06	< 0.001	2.00	1.60, 2.49	1.60, 2.49	< 0.001
Region								
Western	—	—	—		—	—	—	
Central	0.93	0.81, 1.06	0.81, 1.06	0.264	0.98	0.86, 1.12	0.86, 1.12	0.797
Eastern	0.85	0.65, 1.12	0.65, 1.12	0.247	0.78	0.58, 1.04	0.58, 1.04	0.085
Abbreviations: CI = Confidence Interval, OR = Odds Ratio								

CoR = crude odds ratio; AoR = adjusted odds ratio; CI = confidence interval. The analysis was restricted to currently married/in-union women using either a modern or traditional contraceptive method.

In the survey-weighted bivariable analyses, age, educational attainment, place of residence, household wealth, and parity were associated with use of traditional rather than modern contraceptive methods, whereas broad geographic region was not significantly associated with method type (Table 2).

After adjustment for all prespecified covariates, age remained associated with contraceptive method type. Compared with women aged 15–24 years, women aged 25–34 years had 40% higher adjusted odds of using a traditional rather than a modern contraceptive method (AoR 1.40, 95% CI 1.10–1.77), while women aged 35–49 years had 80% higher adjusted odds (AoR 1.80, 95% CI 1.41–2.30). Educational attainment showed a graded association with the use of traditional methods. Compared with women with no education, women with primary education did not differ significantly in their adjusted odds of using traditional methods (AoR 1.07, 95% CI 0.61–1.87). However, women with secondary education had approximately twice the adjusted odds of using a traditional rather than a modern method (AoR 2.02, 95% CI 1.16–3.52), and women with higher education had nearly four times the adjusted odds (AoR 3.80, 95% CI 2.16–6.70).

Place of residence also remained associated with the type of contraceptive method. Rural women had 27% lower adjusted odds of using a traditional rather than a modern method compared with urban women (AoR 0.73, 95% CI 0.64–0.84). Although household wealth showed clear crude associations with

method type, these associations were attenuated after adjustment. None of the wealth categories differed significantly from the poorest quintile in the adjusted model. For example, women in the richest quintile had an adjusted odds ratio of 1.13 (95% CI 0.91–1.41), indicating no statistically significant difference after accounting for the other covariates.

Parity was associated with the use of the traditional method only among women in the highest parity category. Women with five or more children had twice the adjusted odds of using a traditional rather than a modern contraceptive method compared with women with 0–2 children (AoR 2.00, 95% CI 1.60–2.49). Women with 3–4 children did not differ significantly from the reference group (AoR 1.05, 95% CI 0.93–1.18). The broad geographic region was not significantly associated with contraceptive method type after adjustment. Compared with Western Indonesia, neither Central Indonesia (AoR 0.98, 95% CI 0.86–1.12) nor Eastern Indonesia (AoR 0.78, 95% CI 0.58–1.04) showed statistically significant differences.

Discussion

This study examined traditional rather than modern contraceptive method use among currently married/in-union contraceptive users in Indonesia. Approximately one in ten contraceptive users used a traditional method, with withdrawal accounting for the largest proportion of traditional method use, followed by periodic abstinence and other traditional methods. After adjustment for measured covariates, use of traditional rather than modern methods was associated with older age, higher educational attainment, urban residence, and high parity. In contrast, household wealth and broad geographic region were not significantly associated with method type after adjustment. These findings characterize population groups in which traditional contraceptive use was more common but do not establish the motivations, preferences, or constraints underlying contraceptive choices.

Age showed a clear association with contraceptive method type. Women aged 25–34 years had higher adjusted odds of traditional rather than modern method use than women aged 15–24 years, and the association was stronger among women aged 35–49 years. Differences in contraceptive practices across reproductive age groups have also been reported in studies from other low- and middle-income settings [30–32]. Age may capture several dimensions of the reproductive life course, including reproductive history, previous experience with contraceptive methods, and changing fertility intentions. However, these mechanisms were not directly measured in the present study. The observed association should therefore be interpreted as an age-related pattern in method use rather than evidence that older women deliberately prefer traditional methods or use them for specific fertility purposes.

Educational attainment was among the strongest characteristics associated with the use of traditional methods. Compared with women with no education, women with secondary education had approximately twice the adjusted odds of using a traditional rather than a modern method, while women with higher education had nearly four times the adjusted odds. This association persisted after adjustment for age, residence, household wealth, parity, and geographic region. The finding is notable because traditional contraceptive use is sometimes assumed to be concentrated among women with

limited socioeconomic resources or limited knowledge of modern contraception. Nevertheless, educational attainment should not be interpreted as a direct measure of contraceptive knowledge, informed choice, autonomy, or access to services. The mechanisms underlying the observed educational gradient cannot be determined from the IDHS variables included in this analysis [33, 34]. Further research is needed to establish whether differences in contraceptive knowledge, concerns about side effects, previous method experiences, fertility intentions, partner communication, or other factors contribute to this pattern.

An important distinction emerged between education and household wealth. The traditional method used increased across wealth quintiles in the descriptive and crude analyses, with substantially higher crude odds among women in the richest quintile. However, these associations were markedly attenuated and were no longer statistically significant after adjustment for education and the other prespecified covariates. Thus, the present findings do not support household wealth as an adjusted correlate of traditional rather than modern contraceptive method use. This attenuation also illustrates the importance of distinguishing descriptive socioeconomic gradients from associations that persist after accounting for correlated demographic and socioeconomic characteristics. It would therefore be inappropriate to conclude from these data that greater household wealth itself increases the use of traditional methods.

Place of residence remained associated with contraceptive method type after adjustment. Rural women had lower adjusted odds of using traditional rather than modern methods compared with urban women. Similar urban–rural differences in contraceptive practices have been reported in other settings [35, 36]. Several mechanisms could potentially contribute to residential differences, including variation in service delivery, contraceptive information, method availability, socioeconomic conditions, and local social environments. However, these potential explanations were not directly evaluated in the present analysis. In particular, the finding should not be interpreted as evidence that urban women have greater contraceptive autonomy or that rural women rely more heavily on public family planning services. Such explanations require direct measures of service access, counseling exposure, decision-making, and contraceptive preferences [37].

Parity was also associated with contraceptive method type, although the pattern was concentrated among women with very high parity. Women with 5 or more children had approximately twice the adjusted odds of using a traditional rather than a modern method compared with women with 0–2 children, whereas women with 3–4 children did not differ significantly from the reference group. This finding is consistent with the possibility that contraceptive practices vary according to reproductive history and stage of family formation [38–40]. However, parity alone cannot distinguish whether contraception is being used for birth spacing, fertility limitation, or other reproductive intentions [41–44]. The present analysis, therefore, does not establish that high-parity women use traditional methods because they have completed their desired family size [45].

The geographic analyses provide a complementary but more limited perspective. Descriptive provincial estimates indicated variation in traditional contraceptive method use across Indonesia. However, a broad geographic region was not significantly associated with the use of traditional rather than modern methods in the adjusted model. Neither Central nor Eastern Indonesia differed significantly from Western Indonesia after adjustment for the measured individual and household characteristics. These results suggest that broad regional classification contributed relatively little additional explanatory information in the multivariable model. At the same time, the absence of a regional association should not be interpreted as evidence that geographic context is irrelevant. The province-level visualization was descriptive, and the present analysis did not directly measure contextual characteristics such as local service availability, family planning program implementation, cultural norms, or provincial policies. Multilevel or spatial analyses incorporating such contextual indicators would be required to investigate the sources of provincial variation.

The findings have implications for family planning research and practice in Indonesia, although they should not be interpreted as demonstrating why women select traditional methods. The concentration of traditional method use among older, more highly educated, urban, and very high-parity women indicates that traditional method users are not a homogeneous population defined solely by socioeconomic disadvantage. Family planning counseling should therefore continue to provide balanced information on the effectiveness, correct use, advantages, and limitations of the full range of contraceptive options while respecting individuals' reproductive goals and method choices. The present study did not directly assess contraceptive preferences, perceived risks, autonomy, method satisfaction, side-effect concerns, or barriers to modern contraception; these factors should be investigated in future research rather than inferred from sociodemographic associations.

This study has several strengths. It used a large, nationally representative survey and incorporated sampling weights, clustering, and stratification in both descriptive and regression analyses. The analysis also distinguished traditional from modern contraceptive method use rather than combining all contraceptive users into a single category and examined specific traditional methods, showing that withdrawal constituted the majority of traditional method use. In addition, the use of prespecified demographic, reproductive, socioeconomic, and geographic covariates allowed the study to distinguish crude patterns from associations that persisted after adjustment.

Several limitations should also be considered. First, the cross-sectional design precludes determination of temporality and causal relationships; the reported odds ratios should therefore be interpreted as associations. Second, contraceptive method use was self-reported and may be subject to reporting or classification error, particularly for methods that depend on behavioral practices. Third, the analysis was restricted to currently married/in-union women who were using either a modern or traditional contraceptive method. The findings therefore do not apply to unmarried women or women not currently using contraception and should not be interpreted as estimates of factors associated with contraceptive uptake in the general population. Fourth, although the IDHS contains extensive sociodemographic information, the present analysis did not directly measure several constructs potentially relevant to

contraceptive choice, including individual preferences, informed choice, perceived side effects, method satisfaction, autonomy, partner communication, quality of counseling, and access to acceptable contraceptive services. Consequently, the study cannot distinguish whether traditional method use reflects preference, previous experiences, service-related constraints, or other mechanisms. Finally, the provincial analysis was descriptive, and contextual or spatial effects were not formally modeled.

Future research should therefore move beyond sociodemographic associations to examine the mechanisms underlying traditional contraceptive use. Longitudinal studies could clarify transitions between modern and traditional methods over the reproductive life course, while qualitative and mixed-methods research could examine fertility intentions, previous contraceptive experiences, concerns about side effects, perceptions of effectiveness, partner communication, and reasons for choosing particular methods. Multilevel analyses incorporating health-service and provincial contextual characteristics could also help determine whether the observed geographic variation reflects population composition or contextual differences in family planning environments.

Conclusion

Traditional contraceptive methods were used by approximately one in ten currently married/in-union contraceptive users in Indonesia, with withdrawal accounting for the majority of traditional method use. Traditional rather than modern contraceptive method use was associated with older age, higher educational attainment, urban residence, and high parity after adjustment for measured covariates, whereas household wealth and broad geographic region were not significantly associated with method type. These findings demonstrate that traditional method use occurs across distinct demographic, educational, and reproductive profiles and should not be interpreted solely on the basis of socioeconomic disadvantage.

Because this study did not directly measure contraceptive access, preferences, informed choice, perceived risks, autonomy, or motivations for method selection, the observed associations cannot distinguish whether traditional method use reflects individual preferences, previous contraceptive experiences, service-related constraints, or other factors. Family planning programs should therefore provide balanced, person-centered counseling that supports informed contraceptive decision-making and communicates the effectiveness, advantages, and limitations of available methods. Further research incorporating contraceptive preferences, fertility intentions, method experiences, partner communication, and service accessibility is needed to clarify the mechanisms underlying traditional contraceptive use in Indonesia.

Abbreviations

IDHS: Indonesia demographic and health survey; COR: Crude odds ratio; AOR: Adjusted odds ratio; ; EA: Enumeration area; FP: Family planning; BKKBN: National Population and Family Planning Board.

Declarations

Ethics approval and consent to participate

Ethical approval was not required for this study because it was based on secondary analysis of data from the 2017 IDHS (Indonesia Demographic and Health Survey). The data were completely anonymous, and this study uses data with no identifiable information on the survey participants. However, a request to access datasets from the measure DHS website is made, and the website has allowed access to the same before the analysis is conducted.

Consent for publication

Not applicable.

Availability of data and materials

The dataset used has been submitted to this journal as an additional supporting file.

Competing interest

The authors declare that they have no competing interests.

Funding

There is no funding for this study.

Authors' contribution

AF carried out the contraception studies, particularly implemented the design, conducted statistical analysis, and contributed to the writing of the manuscript. AA, EAP, and PN designed and coordinated the statistical analysis and contributed to drafting the manuscript. AR and FKF helped draft the manuscript and contributed to data analysis and interpretation. AP contributed to editing the entire manuscript and to drafting some sections. We confirm that all authors have read and approved the final manuscript.

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Figures

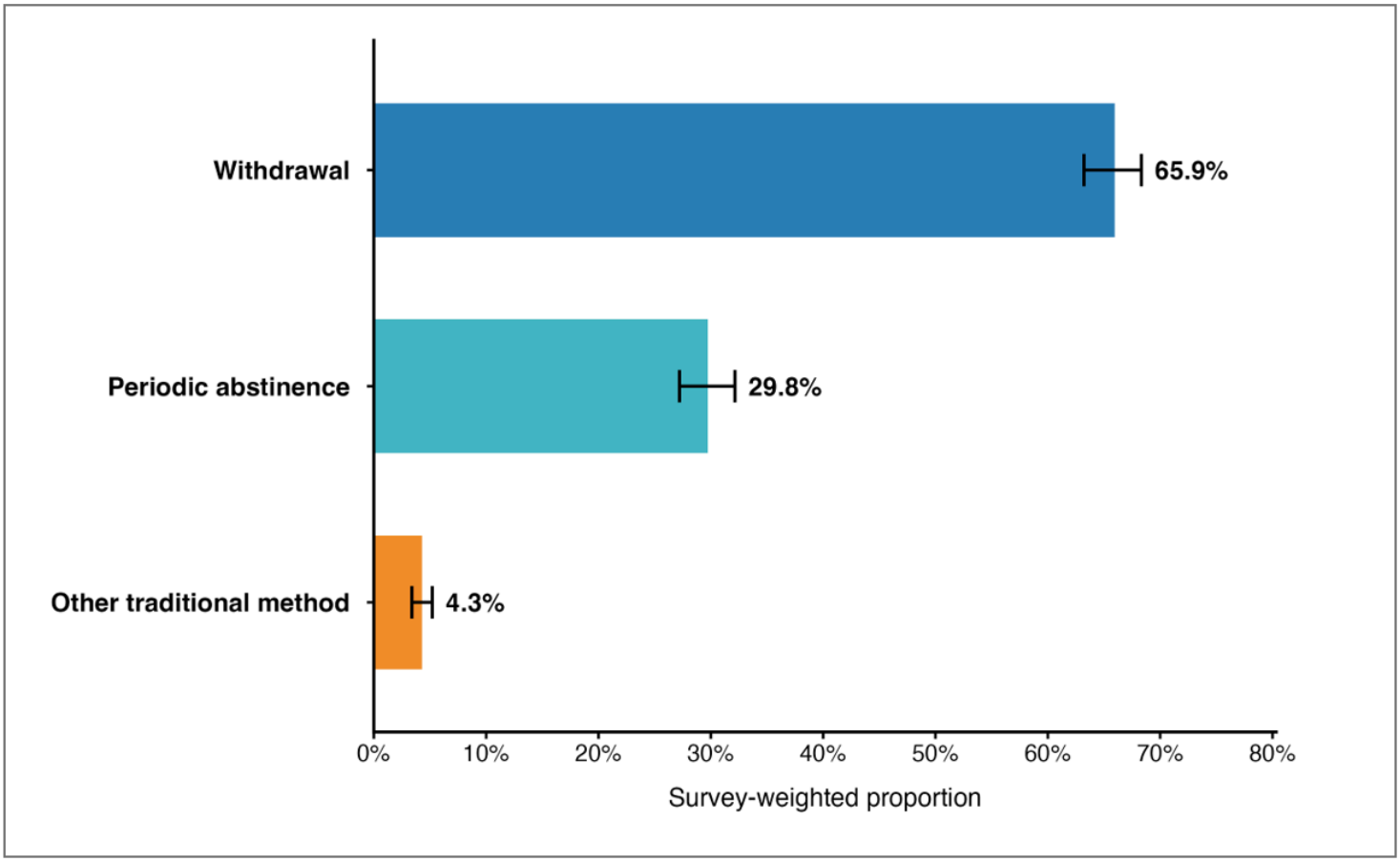


Figure 1

Distribution of traditional contraceptive methods among users, IDHS 2017.

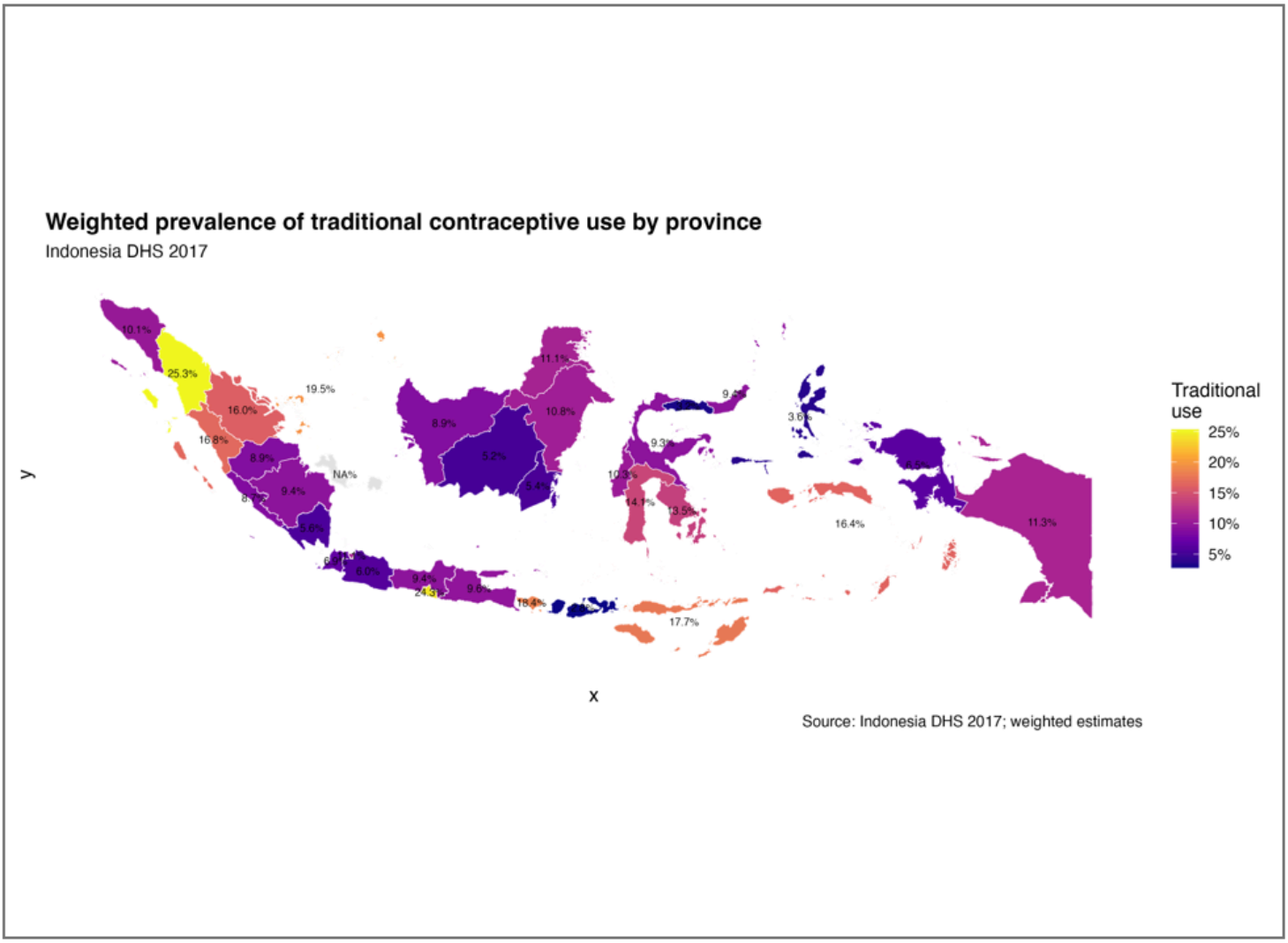


Figure 2

Weighted Prevalence of Traditional Contraceptive use by province