

Research Article

# Factors Associated with Family Planning: A Secondary Analysis of Senegal's DHS 2019

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## Abstract

**Background.** In Senegal, despite numerous interventions, the family planning rate has stagnated since 2016. The aim of this study is to analyze the determinants of modern contraceptive use in Senegal in 2019. **Methods.** This study is a secondary analysis of data from the 2019 Senegal Demographic and Health Survey. The sample consisted of 8998 women aged 15 to 49 years. Univariate, bivariate and multivariate analyses were performed. The dependent variable was the use of a modern contraceptive method (yes/no). STATA.15 software was used. **Results.** Women using any method of contraception accounted for 18.8%. Those using long-acting methods were more numerous, with implants (37.4%) and injections (29.6%) respectively. Women using the pill were 14.8%. The majority of women had received information about family planning from television (46%) and radio (42.2%). The factors associated with modern contraception were age, women's education (ORaj 1.48 [1.21-1.81]), marital status (ORaj 7.18 [5.29-9.74]), average (ORaj 1.58 [1.18-2.12]) and high (1.62 [1.15-2.27]) socioeconomic status, and receipt of information by radio (ORaj 1.31 [1.08-1.58]). **Conclusion.** This study has shown that, as part of a multisectoral approach, decision-makers should strengthen women's empowerment (education and income-generating activities). Radio should also be given priority as a means of promoting family planning in Senegal.

## Keywords

Family Planning, Associated Factors, Senegal

## 1. Introduction

Family planning saves the lives of women and children and improves the quality of life for all. Access to modern contraception for women and girls is important for the sustainability of our planet, the full economic potential of all countries and the health of future generations [1].

It is one of the essential components of primary health care, aimed at improving maternal, newborn and child health by reducing morbidity and mortality in these categories, as well as reducing the transmission of HIV/AIDS [2]. Contraception is the main health service intervention that enables women and girls to

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control if and when they become pregnant. Currently, around 705 million women living in LMICs use contraception, preventing around 376 million unwanted pregnancies. Preventing these unwanted pregnancies avoids 39 million miscarriages, two million stillbirths and 131,000 maternal deaths a year [3]. As a result, family planning programs have become a necessity in sub-Saharan Africa, which is why in 1980 the Senegalese government repealed the 1920 law banning contraceptive promotion and the use of contraceptives [4]. Family planning programs were then introduced in a growing number of maternal and child health services. In 1988, the government adopted a population policy whose general objectives included reducing fertility rates and the rate of population growth. Among the measures advocated were the promotion of family planning and the dissemination of contraceptive methods, as well as population education to prevent teenage pregnancies [5].

After all the interventions carried out over several decades, the rate of modern contraceptive use in Senegal has begun to stagnate since 2016, with a rate of 23.7%, 26.3% in 2017 and even a reduction to 25.4% in 2018 [6]. However, studies have shown that there are still socio-cultural and healthcare system-related barriers to the use of modern contraceptive methods [7, 8, 9]. However, most of these studies do not address the other health determinants that may influence the adoption of a modern contraceptive method in Senegal. With this in mind, the aim of this study is to analyze the determinants of modern contraceptive use in Senegal in 2019.

## 2. Materials and Methods

### 2.1. Type

This was a descriptive cross-sectional, descriptive and analytical study. This study consisted of a secondary analysis of data from the Senegal Demographic and Health Survey (DHS) 2017, a nationally representative survey of 8 6491 women aged 15–49.

### 2.2. Study Population

In our study, a secondary analysis of the Senegal 2019 DHS data was performed. Participants from urban and rural areas were selected from all 14 administrative regions of Senegal. It was women aged 15 to 49 living in Senegal.

### 2.3. Inclusion Criteria

The questionnaire was used to record information from women who were residents or visitors the night before the survey. It was women aged 15–49 living in Senegal found in households and having slept in the household the night before.

### 2.4. Non-Inclusion Criteria

Those who refused to take part in the survey were non included.

### 2.5. Sampling

The DHS sample is representative at the national level, at the regional level, for urban and rural areas, and at the level of Senegal's 14 regions. The DHS sample is drawn stratum by stratum. Thus, in accordance with the DHS methodology, the sample is based on a stratified, two-stage area sample drawn in accordance with the DHS sampling methodology. For the DHS in Senegal, at the first level, the survey concerns 400 clusters (Primary Survey Units - UPS) which are drawn from the list of Enumeration Zones (ZD) established during the General Census of Population and Housing, Agriculture and Livestock (RGPHAE), using a systematic draw with probability proportional to size, the size of the UPS being the number of households. A count of households in each of these clusters provides a list of households from which a second-stage sample of 22 households per cluster has been drawn, in both urban and rural areas, using a systematic draw with equal probability. The file used is the Individual Recode file.

The unit of analysis for this file is: women of reproductive age between 15 and 49 who spent the night in the household the night before the interview.

### 2.6. Variables

The dependent variable was the "use of a modern contraceptive method". This variable is a binary "yes" and "no" DHS variable.

The study considered explanatory variables related socio-demographic and economic factors.

#### *Socio-demographic and economic factors*

This included the mother's age and marital status (divorced, married, widowed). Age was analyzed by 5-year age groups (15–19; 20–24; 25–29; 30–34; 35–39; 40–44; 45–49).

These were the place of residence dichotomised as "urban" or "rural", the sex of the head of household, the mother's education which was dichotomised into 5 modalities of the level of education "No education" (this modality corresponds to those who have not been educated at the French modern school), "Primary", "The father's education was dichotomised into 5 categories: 'No education' (this category corresponds to those who have not attended a French modern school), 'Primary', 'Secondary', 'Higher' and 'Don't know'. The wealth index, a measure of relative economic well-being based on household assets, was classified into quintiles (lowest, second, middle, fourth, highest) and derived from the wealth score.

### 2.7. Analysis

The analysis was carried out using STATA/SE 15.1 software.

As indicated above in the section on data sources, a two-stage sampling design was adopted. To account for the multi-stage sampling design of the survey, all data were

weighted to account for disproportionate sampling and non-response.

In the descriptive analysis, variables were presented in terms of frequency and percentage of data. Comparisons between groups were made using the Chi2 test. The significance level was set at 0.05, and confidence intervals (CI) of 95% were considered. Variables with a p value of less than 0.25 in the bivariate analysis were retained for the multivariate analysis.

To assess the factors associated with the use of modern contraception, a multivariate logistic analysis was performed to consider the effect of confounding factors. Adjusted odds ratios (ajOR) were calculated with their 95% confidence intervals. To handle complex sampling (multi-stage sampling, weighting and stratification), the variables identifying weights, strata and primary sampling units (PSUs) were defined before using the svy command (STATA survey prefix).

A total of 4,708 households were selected, of which 4,580 occupied households were identified at the time of the survey. Of these 4,580 households, 4,538 were successfully surveyed, giving a response rate of 99%. Response rates varied very little between areas of residence.

In addition, the survey identified 8,998 women aged 15-49 in the 4,538 households interviewed during the survey, and for 8,649 of them the interview was successfully completed. Overall, the response rate for eligible women was 96%. Nor was there any difference between areas of residence (96% in each case).

### 3. Results

A total of 8998 women were surveyed.

#### Contraceptive methods

Women using a contraceptive method accounted for 18.8%. Of those who did, those using long-acting methods were more numerous, with implants (37.4%), injections (29.6%) and, to a lesser extent, the intra-uterine device (7.1%). Women using the pill accounted for 14.8% (Table 1).

**Table 1.** Description of contraceptive methods used.

Caract éristics	N = 8 6491
Use of a modern contraceptive method	
No	7 020 (81.2%)
Yes	1 629 (18.8%)
Contraceptive method used	
Pills	241 (14.8%)
Intra uterine device	116 (7.1%)
Injections	482 (29.6%)
Diaphragm	0 (0.0%)

Caract éristics	N = 8 6491
Male condom	48 (2.9%)
Female sterilisation	42 (2.6%)
Male sterilisation	3 (0.2%)
Period of abstinence	31 (1.9%)
Interrupted coitus	6 (0.4%)
Traditional method of contraception	43 (2.7%)
Implants/Norplant	609 (37.4%)
Long-term abstinence	0 (0.0%)
Breast-feeding method (LAM)	1 (0.1%)
Female condom	0 (0.0%)
Spermicides	0 (0.0%)
Emergency contraception	1 (0.1%)
Other methods	0 (0.0%)
Fixed-day methods	5 (0.3%)

Description of socio-demographic characteristics related to the use of modern contraceptive methods

More women (19.9%) use modern contraception in urban areas. The proportion of married respondents using contraception was 26.9%, compared with 3.9% of unmarried respondents. The proportion of employed women using contraception was 24.2%, compared with only 13.8% of non-employed women. Women in the poorest wealth quintile used contraception the least, at 15.6% (table 2).

**Table 2.** Distribution of use of modern contraception according to socio-demographic characteristics.

Characteristics	ajOR <sup>l</sup>	95% CI <sup>l</sup>	p-value
Place of residence			
Urban	1	—	
Rural	1	0.79 – 1.26	0.997
Age			
15-19	1	—	
20-24	3.12	2.07 – 4.71	<0.001*
25-29	4.08	2.81 – 5.92	<0.001*
30-34	6	4.05 – 8.89	<0.001*
35-39	5.74	3.74 – 8.81	<0.001*
40-44	5.11	3.37 – 7.74	<0.001*
45-49	3.57	2.31 – 5.53	<0.001*
Level of education			

Characteristics	ajOR <sup>†</sup>	95% CI <sup>†</sup>	p-value	Characteristics	ajOR <sup>†</sup>	95% CI <sup>†</sup>	p-value
No instruction	1	—		No	1	—	
Primary	1.48	1.21 – 1.81	<0.001*	Yes	1.31	1.08 – 1.58	0.005*
Secondary	1.37	1.07 – 1.76	0.014*	Heard about family planning in the last few months on TV			
Superior	1.59	0.89 – 2.81	0.113	No	1	—	
Respondent's occupation				Yes	1.17	0.94 – 1.47	0.165
Not working	1	—		Heard about family planning in the newspapers over the last few months			
Work	1.21	1.04 – 1.41	0.014*	No	1	—	
Wealth quintile				Yes	0.92	0.65 – 1.29	0.623
The poorest	1	—		<p>More than half the women (61.10%) chose the contraceptive method that suited them with their husband, and 20.8% decided alone.</p> <p>The majority of respondents had received information about family planning on television, with a relative frequency of 46%, and on the radio, with a relative frequency of 42.2% (Table 3).</p>			
The poor	1.2	0.96 – 1.51	0.11				
The middle	1.58	1.18 – 2.12	0.002*				
The rich	1.62	1.15 – 2.27	0.006*				
The richest	1.43	0.97 – 2.10	0.068				
Marital status							
Not married	1	—					
Married	7.18	5.29 – 9.74	<0.001*				
Heard about family planning on the radio in recent months							

**Table 3.** Distribution of modern contraceptive use according to knowledge and sources of family planning information.

Characteristics	No, N = 7 020	Yes, N = 1 629	p-value
Knowing a method			<0,001
No	586 (100.0%)	0 (0.0%)	
Yes	6 435 (79.8%)	1 629 (20.2%)	
Heard about family planning on the radio in recent months			<0,001
No	4 260 (85.3%)	736 (14.7%)	
Yes	2 760 (75.6%)	892 (24.4%)	
Heard about family planning in the last few months on TV			<0,001
No	3 966 (85.0%)	702 (15.0%)	
Yes	3 055 (76.7%)	927 (23.3%)	
Heard about family planning in the newspapers over the last few months			0,024
No	6 569 (81.5%)	1 493 (18.5%)	
Yes	452 (76.9%)	136 (23.1%)	
Heard about family planning through text messages on the phone (sms)			0,25
No	6 961 (81.1%)	1 619 (18.9%)	
Yes	59 (86.4%)	9 (13.6%)	

Factors associated with the use of contraceptive methods

Women in the [30-34], [35-39] and [40-44] age groups

were respectively 6, 5.71 and 5.11 times more likely to use a modern contraceptive method, with ORaj 6 [4.05 - 8.89], 5.71 [3.74 - 8.81] and 5.11 [3.37 - 7.74] respectively (Table 4). Educated women were 1.48 times more likely to use a modern contraceptive method ORaj 1.48 [1.21 - 1.81], married women were 7.18 times more likely to use a modern contraceptive method ORaj 7.18 [5.29 - 9.74] (Table 4).

Women with an average or rich quintile of economic well-being were respectively 1.58 and 1.62 times more likely to use a modern contraceptive method ORaj 1.58 [1.18-2.12] and 1.62 [1.15-2.27].

Women informed by radio about FP were 1.31 times more likely to use a modern contraceptive method ORaj 1.31 [1.08-1.58] (Table 4).

**Table 4.** Factors associated with the use of a contraceptive method.

Characteristics	ajOR <sup>l</sup>	95% CI <sup>l</sup>	p-value
Place of residence			
Urban	1	—	
Rural	1	0.79 – 1.26	0.997
Age			
15-19	1	—	
20-24	3.12	2.07 – 4.71	<0.001*
25-29	4.08	2.81 – 5.92	<0.001*
30-34	6	4.05 – 8.89	<0.001*
35-39	5.74	3.74 – 8.81	<0.001*
40-44	5.11	3.37 – 7.74	<0.001*
45-49	3.57	2.31 – 5.53	<0.001*
Level of education			
No instruction	1	—	
Primary	1.48	1.21 – 1.81	<0.001*
Secondary	1.37	1.07 – 1.76	0.014*
Superior	1.59	0.89 – 2.81	0.113
Respondent's occupation			
Not working	1	—	
Work	1.21	1.04 – 1.41	0.014*
Wealth quintile			
The poorest	1	—	
The poor	1.2	0.96 – 1.51	0.11
The middle	1.58	1.18 – 2.12	0.002*
The rich	1.62	1.15 – 2.27	0.006*
The richest	1.43	0.97 – 2.10	0.068
Marital status			

Characteristics	ajOR <sup>l</sup>	95% CI <sup>l</sup>	p-value
Not married	1	—	
Married	7.18	5.29 – 9.74	<0.001*
Heard about family planning on the radio in recent months			
No	1	—	
Yes	1.31	1.08 – 1.58	0.005*
Heard about family planning in the last few months on TV			
No	1	—	
Yes	1.17	0.94 – 1.47	0.165
Heard about family planning in the newspapers over the last few months			
No	1	—	
Yes	0.92	0.65 – 1.29	0.623

\*ajOR = adjusted odd ratio, IC = confidence interval, p-value lower than 0,05, \*significatif

## 4. Discussion

This study showed that age was a factor associated with the use of modern contraception. Women aged between 30 and 34 were 6 times more likely to use modern contraception, while those aged [35-39] and [40-44] were 5.71 and 5.11 times more likely respectively. In sub-Saharan Africa, other studies have shown that women were more likely to use modern contraceptives if they were older than 35 [10]. This may be linked to the fact that in sub-Saharan Africa, older women may have a lower desire to become pregnant, as do those who have had four or more births [AOR = 0.10, CI = 0.09-0.11] [11]. In this study, educated women were 1.48 times more likely to use a modern method of contraception ORaj 1.48 [1.21 - 1.81]. In Senegal, it had also been shown that the young age of women puts them in a position of guardianship, most often towards their husbands. Thus, decision-making autonomy concerning their health is low among married women (ORa = 0.09 [0.02-0.38]), which influences their adherence to family planning [12]. Generally, the lack of support from the husband [13] or the husband's disapproval [14] influences the use of modern contraception. Educated women were 1.48 times more likely to use a modern contraceptive method ORaj 1.48 [1.21 - 1.81]. Other studies have also found that lack of education is a barrier to the use of modern contraception (14). Women with a higher level of education were six times more likely to use a modern contraceptive than women with no education (aHR=6.18 (95% CI 5.15 to 7.42)) [15]. The association between belief in the beneficial effects of FP and the use of modern contraception is significant [16]. Access to information about family planning had a positive effect on the adoption of modern contraceptive methods [10]. In Senegal,

for example, our study showed that women who were informed about FP by radio were 1.31 times more likely to know a contraceptive method (aOR = 303.8, 95% CI 89.9-1027.5). Women in the middle and richest wealth quintiles were 1.58 and 1.62 respectively more likely to use a modern contraceptive method ORaj 1.58 [1.18-2.12] and 1.62 [1.15 - 2.27]. In Uganda, it was shown that women with a higher socio-economic level were more likely to use a contraceptive method [17]. This is linked to the fact that the socio-economic level increases women's autonomy to control their fertility [18]. Contraceptive method use depends on women's level of knowledge. In this study, women informed about FP on the radio were 1.31 times more likely to use a modern contraceptive method ORaj 1.31 [1.08-1.58]. Radio has the power to broadcast and disseminate information in sub-Saharan Africa, and has been used successfully elsewhere and in Senegal to communicate information on family planning to a larger number of target populations [19].

#### Limits

One of the major strengths of this study lies in the use of data from the Senegal DHS, which are representative of Senegal. This makes it possible to generalize the results of the study to women of childbearing age in Senegal. However, this study has certain limitations. In particular, the analyses used cross-sectional data, so that only associations and not cause-and-effect relationships were established. This study could be supplemented by a qualitative study to clarify the social contexts in which gender relations influencing the use of modern contraception evolve.

## 5. Conclusions

This study showed that education and socio-economic level had a positive influence on the adoption of modern contraception. Policies should therefore take account of women's empowerment factors to improve their uptake of family planning. The study also identified radio as a communication tool with a positive influence on contraceptive practices. One of the recommendations of this study is therefore to promote the use of radio as a source of information for the promotion of family planning.

## Abbreviations

AjOR	Adjusted Odd Ratio
DHS	Demographic and Health survey
TV	Television Files and Multimedia Files Along with Their Manuscripts

## Author Contributions

**Ndèye Marème Sougou:** Conceptualization, Methodology, Formal Analysis, Validation, Writing original draft  
**Mokhamed Faly Ba:** Methodology, Formal Analysis

**El Houceine Ouari:** Methodology, Validation

**Fatou Bintou Diongue Lopez:** Writing – review & editing

**Amadou Ibra Diallo:** Writing – review & editing

**Cheikh Tacko Diop:** Writing – review & editing

**Ibrahima Seck:** Writing – review & editing

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## Data Availability Statement

The data that support the findings of this study can be found at: <https://dhsprogram.com/data/available-datasets.cfm>. The data is available from the corresponding author upon reasonable request.

## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] Lancet T. Family planning: accelerating the way ahead. *The Lancet*. 9 d é 2017; 390 (10112), pp: 2527.
- [2] Titiyos A, Mehretie Y, Alemayehu YK, Ejigu Y, Yitbarek K, Abraham Z, et al. Family planning integration in Ethiopia's primary health care system: a qualitative study on opportunities, challenges and best practices. *Reprod Health*. 1 d é 2023; 20(1), pp 176.
- [3] Askew I, Raney L, Kerrigan M, Sridhar A. Family planning saves maternal and newborn lives: Why universal access to contraception must be prioritized in national maternal and newborn health policies, financing, and programs. *International Journal of Gynecology & Obstetrics* [Internet]. [cit é 9 janv 2024]; n/a(n/a). Disponible sur: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ijgo.15127>
- [4] LOI N °1980 49 DU 24 DÉCEMBRE 1980.pdf [Internet]. [cit é 9 janv 2024]. Disponible sur: <https://www.dri.gouv.sn/sites/default/files/LOI/1980/Commission%20loi%20decentralisation%20et%20travail/LOI%20N%C2%B0%201980%2049%20DU%2024%20D%C3%89CEMBRE%201980.pdf>
- [5] OMS, USAID. Le repositionnement de la Planification Familiale: Directives pour actions de plaidoyer [Internet]. 2008 [cit é 4 f évr 2015]. Disponible sur: [www.who.int/reproductive-health/family\\_planning/index.html](http://www.who.int/reproductive-health/family_planning/index.html)
- [6] Senegal, Rapport EDS 20189 [Internet]. [cit é 16 janv 2024]. Disponible sur: <https://dhsprogram.com/pubs/pdf/FR367/FR367.pdf>
- [7] Kaur S, Blumenthal PD. Global myth busting in family planning. *Curr Opin Obstet Gynecol*. 1 d é 2021; 33(6), pp 458-62.

- [8] Cohen N, Mendy FT, Wesson J, Protti A, Cissé C, Gueye EB, et al. Behavioral barriers to the use of modern methods of contraception among unmarried youth and adolescents in eastern Senegal: a qualitative study. *BMC Public Health*. 29 juin 2020; 20(1), pp 1025.
- [9] Naré C, Katz K, Tolley E. Adolescents' access to reproductive health and family planning services in Dakar (Senegal). *Afr J Reprod Health*. sept 1997; 1(2), pp 15-25.
- [10] Boadu I. Coverage and determinants of modern contraceptive use in sub-Saharan Africa: further analysis of demographic and health surveys. *Reprod Health*. 21 janv 2022; 19(1), pp 18.
- [11] Ahinkorah BO, Seidu AA, Armah-Ansah EK, Budu E, Ameyaw EK, Agbaglo E, et al. Drivers of desire for more children among childbearing women in sub-Saharan Africa: implications for fertility control. *BMC Pregnancy Childbirth*. Déc 2020; 20(1), pp 778.
- [12] Sougou NM, Sougou AS, Bassoum O, Lèye MMM, Faye A, Seck I. Facteurs associés à l'autonomie de décision des femmes pour leur santé au Sénégal. *Santé Publique*. 2020; 32(4), pp 381-8.
- [13] Wright KO, Akinyinka MR, Fagbemi T, Aderibigbe A, Banke-Thomas A, Wusu O. Contraceptive use and fertility control in rural and urban communities of Lagos Nigeria. *Niger Postgrad Med J*. 2023; 30(1), pp 31-9.
- [14] Durowade KA, Omokanye LO, Elegbede OE, Adetokunbo S, Olomofe CO, Ajiboye AD, et al. Barriers to Contraceptive Uptake among Women of Reproductive Age in a Semi-Urban Community of Ekiti State, Southwest Nigeria. *Ethiop J Health Sci*. mars 2017; 27(2), pp 121-8.
- [15] Fagbamigbe AF, Adebawale AS, Morhason-Bello I. Survival analysis of time to uptake of modern contraceptives among sexually active women of reproductive age in Nigeria. *BMJ Open*. 15 déc 2015; 5(12): e008371.
- [16] Kraft JM, Serbanescu F, Schmitz MM, Mwanshemele Y, Ruiz C AG, Maro G, et al. Factors Associated with Contraceptive Use in Sub-Saharan Africa. *J Womens Health (Larchmt)*. mars 2022; 31(3), pp 447-57.
- [17] Van den Broeck G. Women's employment and family planning in rural Uganda. *Women Health*. 2020; 60(5), pp 517-33.
- [18] Olubodun T, Balogun MR, Ogunsilu EA. Awareness and practice of family planning among women residing in two rural communities in Ogun State, South West Nigeria. *Ann Afr Med*. 2020; 19(4), pp 246-51.
- [19] Ahn J, Briers G, Baker M, Price E, Strong R, Piña M, et al. Radio Communications on Family Planning: Case of West Africa. *International Journal of Environmental Research and Public Health*. janv 2022; 19(8), pp 4577.