The Decision-making in Couples and Modern contraception use among Women in Côte d'Ivoire

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Abstract

This research analyzes the impact of decision making in couples on the usage of modern contraception and identifies the other relevant socioeconomic and cultural determinants. From “Côte d'Ivoire Demographic and Health Surveys 2012”, the statistics results showed that the percent of women who have knowledge on contraception is very low. The usage of contraception is higher among young than older and is two times higher among urban than rural. The Probit regression results showed that decision-making power in couples has a strong positive significantly impact on using contraceptive methods. Furthermore, education, knowledge on methods, living environment and age are major determinants of the contraceptive practice. In contrast, Muslim religion has a negative significantly impact on the probability of using contraception. The reproductive health workers must involve couples and religious leaders, especially the Muslim authorities in advocacy and activities of sensitization for better usage of modern contraception in households. The health authorities must also reduce the regional gap concerning free distribution of the products of modern contraception. Similarly, the providers must play their role to increase access to the products of modern contraception to better meet the needs and satisfaction of women in family planning.

Keywords: Modern contraception – Decision-making— Usage – Women childbearing age— Family planning – Côte d'Ivoire

JEL Classification: J13 D0.

1. Introduction

In the world, women are exposed to the risks of unintended pregnancy and abortion. Statistics have shown that globally, 56 million abortions (safe or unsafe) are registered (Ganatra et al, 2017). 25% of unwanted pregnancies ended in induced abortion (Ganatra et al, 2017). In sub-Saharan Africa, most women of childbearing age use traditional, dangerous methods. As a result, they are exposed to a high risk of mortality (Sedgh et al, 2014). In fact, it is estimated that every year nearly 70,000 women die as a result of unsafe abortion (Shah and Ahman, 2009). The risk of unsafe abortion is highest in Africa (Ganatra et al, 2017). Some women suffer from genital complications after unsafe abortion (Singh et al, 2017). In Côte d'Ivoire, 15% of these deaths are related to unsafe abortions (Guillaume and Loû, 2002). The good knowledge on family planning and its methods will reduce the rate of mortality of women (Ajong et al, 2016). Indeed, unsafe abortion is one of the main causes of women death. Promoting the usage of modern contraception will reduce rates of unsafe abortion and mortality among women (Mohamed et al, 2015). The common goal of all national and international health actors is to increase access to modern contraception to better meet the needs of women in family planning (Jacobstein et al, 2013). In Côte d'Ivoire, one of the objectives of the government is to increase the number of women users of contraceptive products to 2.2 million (UNFPA, 2009). Thus, Ivorian policy makers have taken actions to promote the usage of contraception through family planning programs. Since 2012, promoting the practice of modern contraceptive methods has prevented more than one million unintended pregnancies and 320,000 unsafe abortions (Singh and Darroch, 2012). In so doing, between 2013 and 2015, Côte d'Ivoire spent 5 billion CFA francs ($ 8.6 million) on family planning (Darroch and Singh, 2013).

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In 2016, Côte d'Ivoire also spent 400,000 million FCFA ($690,000) for the purchase of contraceptive products (Singh and Darroch, 2012). Public expenses relative to the promoting of modern contraception made progress. Thus, 82% of health facilities offer family planning services (Darroch and Singh, 2013). Côte d'Ivoire also strengthened community services to make contraceptive products available to all women of childbearing age. Despite the actions of the Ivorian government to cover and meet the needs of women in family planning, the rate of the usage of modern contraception remains low in Côte d'Ivoire. 17% of women who do not want pregnancy, use modern contraceptive methods (UNFPA, 2009). This low rate can be explained by the delay in the adoption of the policy of population regulation and also the lack of knowledge on modern methods of contraception. The population regulation policy was adopted by the Ivorian government in the late 1990s. Other factors may better influence the usage of modern contraception. This study fits into this perspective and attempts to assess the impact of decision making within couples on the usage of modern contraception and analyze the other relevant socioeconomic and cultural determinants.

In first, we examine the impact of decision-making in couples on the usage of modern contraception among women;

In second, we show the effect of each explanatory socioeconomic and cultural variable on the practice of modern contraception among women in Côte d'Ivoire. We use statistic and econometric approaches for the study. The rest of the paper is structured as follows: section 2 presents the Literature Review; in section 3, we show Data and Methods, we explain the Results in section 4 and section 5 highlights the Discussion and Conclusion.

2. Literature review

2.1. Empirical studies

Several studies showed the importance of using contraceptive methods as an effective way to make a longer interval between births and prevent unintended pregnancies. These include Ajayi et al (2018) who have shown that contraception is often needed to plan births. Family planning is a population-based policy adopted by several countries around the world, particularly in Africa to slow down population growth. However, there are several socioeconomic factors that justify the behavior of sexually active men and women in the practice of contraception. Contraception is a method using by women (or men) to delay and avoid unplanned pregnancy. Thus, the results of a study of two towns in southwestern Nigeria found that fear of side effects of contraceptive products and lack of support are the main explanatory factors for the non-use of modern contraception (Ajayi et al, 2018). In some poor countries, particularly in sub-Saharan Africa, there are no real mechanisms for promoting and providing information on the place of supply and giving training on the economic benefits of using modern contraception (Ali and Okud, 2013). The advice of reproductive health experts for women is not sufficiently given and followed up. The latter have a lack of knowledge of the products and their side of effects (Assaf et al, 2017). There is also a lack of support for the provision of modern contraceptive products. In the same order of ideas, Ali and Okud (2013) conducted a study in Sudan and their results showed that, fear of complication of reprocreation, lack of conviction and information are the reasons why contraceptive methods are not used. Likewise, a study in Ethiopia showed that socio-demographic characteristics have a direct effect on non-use of contraceptives products (Tiruneh et al, 2016). Indeed, women with very low levels of formal education do not use modern contraceptive methods and prefer to use traditional methods. This categories of women are not accessed of knowledge about contraception (Nzokirishaka and Itua, 2018). The usage of modern contraceptive methods increases with the level of education and income (Tirunet et al, 2016;Mota et al, 2015).

Income is the purchasing power of the individual, the household or the family. It is according to the income that the economic agent makes his choices and preferences in the market to acquire goods and services in order to satisfy his needs. For lack of support in terms of supply, the financial constraints limit the poor in terms of contraceptive products purchase.

In Côte d'Ivoire, Fassassi (2007) also conducted a study on factors associated with contraception practice. His findings showed that high women education, modern employment and access of knowledge about modern methods are the main determinants of the usage of contraception. These authors did not take into account the decision-making power within couples of the usage of modern contraceptive methods. In Africa, the main decision-maker in household is the husband. A study in Tanzania shows that of 365 men, only 31 were involved in planning familial program (Msovela et al, 2016).
This aspect is very important because the rate of waiver of contraceptive methods is very high for women (Ali and Cleland, 2010). In Brazil, women abandon other methods in favor of the injectable method (Leite and Gupta, 2007; Prata et al., 2011). For some women, unintended pregnancy was a consequence of strong opposition by their partners to family planning (Fotso et al., 2014). The findings from another study in Nigeria showed that men were not involved to the process of the practice of contraception (Gueye et al., 2015). Husband must participate to the decision-making process for the usage of contraception in the couple (Tiruneh et al., 2016; Nzokirishaka and Itua, 2018). Indeed, the rate of contraception non-use was strongly significantly associated with Domestic Violence (Stephenson and al, 2008).

2.2. The decline in fertility in Côte d’Ivoire

African societies are characterized by high fertility. Indeed, in the African tradition, children are a source of wealth for parents as they can replace aging human resources. The family is organized into a production unit in which domestic and agricultural tasks are reserved for children and women. The goal is to increase agricultural production and total income. Children are also presented as a source of physical security (Vlassoff, 1982). Thus, from 1960 to 1970, the fertility rate went from 7.35 to 7.88 (Lan and Tavrow, 2017). From 1980, the number of children per woman has decreased. The fertility rate rose from 7.61 in 1980; at 6.62 in 1990; at 5.86 in 2000; at 5.23 in 2010 and 4.94 in 2015 (Lan and Tavrow, 2017). The decline in fertility in Côte d’Ivoire is not necessarily explained by the successful of the family planning policy because the prevalence rate of modern contraception remains low. This rate went from 6% in 1994 to 22.7% in 2018 (USAID, 2017). This shows an upward trend, but it must be pointed out that for 28 years of adoption of the birth control policy in Côte d’Ivoire, the rate of growth in utilization of modern contraception stays low and slow. The decline of fertility in Côte d’Ivoire is partly the consequence of the economic crisis of the 1980s. The impoverishment of the population and the financial constraints imposed on households largely explain the drop in the number of children per woman in Ivorian households.

3. Data and Methods

In this section, the data, the Probit model and the specification of variables will be presented.

3.1. Data

Côte d’Ivoire Demographic and Health Survey 2012 was conducted from December 2011 to May 2012 across the country. In this survey, 10,060 women aged from 15 to 49 are successfully interviewed and so were about 5,135 men aged from 15 to 59 years. The interview consisted in asking some questions to women in order to get information concerning their sexual health, fertility preferences, knowledge and use of family planning methods. The surveys consist in filling three types of questionnaires: questionnaire for the household, for the women and for the children. The woman questionnaire and the child questionnaire depend on the household questionnaire. All persons who were surveyed in a household have a link with the head of the household. The head of the household can be a man or a woman.

The interviews were undertaken following a cluster sampling from the study population. A cluster consists of 25 households, which is to say in a cluster, 25 households are surveyed. These surveys were conducted by the National Institute of Statistics (INS) with technical assistance from ORC Macro, which is responsible for the international program of DHS. There are therefore national survey data. These are secondary data available in the archives of the DHS. The DHS provides information on several areas such as use of family planning methods, breastfeeding practices, nutritional status of women and children under five years, infant mortality, maternal mortality and the health of the mother and child in general. The survey also provides information on knowledge, attitudes, and behavior towards HIV / AIDS and other sexually transmitted Diseases (STDs) and the use of mosquito nets against malaria. HIV, anemia and malaria tests were also done during the survey.

We use SPSS and STATA software to analyze the data. We have qualitative variables and the dependent variable is binary. It’s taking two modalities: 1=Yes and 0=No. that brings us to use Probit model.

3.2. Probit model and specification of variables

The probit model can be presented as following:

Supposed that Me is 1 when a modern contraceptive is used and 0 in the case of non-use. Thus,
\( \text{Me} = \begin{cases} 
1 & \text{if } y^* = f(\text{Deci, Dfh, Rm, Agef, Am, InfoFp, InfoCP, Nch, Reli, ef}) \\
0 & \text{otherwise} 
\end{cases} \)  \hspace{1cm} (1)

Where \( y^* \), a latent variable indicating the possibility of the use of contraceptive methods, is unobservable and related to a set of observable characteristics such as:

- \( \text{Deci} \), Decision of the usage of contraceptive methods;
- \( \text{Dfh} \), human capital of woman;
- \( \text{Rm} \), Residence environment;
- \( \text{Agef} \), Class of age;
- \( \text{Am} \), assets or property owned by the household such as refrigerator, television set, radio etc;
- \( \text{InfoFp} \), Information about family planning and its advantages.
- \( \text{InfoCP} \), Information about sources and types of modern contraceptives;
- \( \text{Nch} \), Number of children
- \( \text{Reli} \), woman religion,
- \( \varepsilon \), error.

We derive from equation (1), the following equation:

\[ \text{Me} = g(\text{Deci, Dfh, Rm, Agef, Am, InfoFp, InfoCP, Nch, Reli, } \varepsilon) \]  \hspace{1cm} (2)

Where \( \text{Me} \) represents the probability of using modern contraceptives.

From equations (1) and (2), we have:

\[ Y^* = \alpha_0 + \alpha_1 \text{Dfh} + \beta_1 \text{Rm} + \gamma \text{Agef} + \delta \text{Am} + \sigma \text{InfoFP} + \eta \text{InfoCP} + \mu \text{Nch} + \lambda_1 \text{Reli} + \omega_1 \text{Deci} + \varepsilon \]  \hspace{1cm} (3)

From Equation 3, we deduce the following equation:

\[ Y_i^* = \alpha_0 + \alpha_1 \text{Dfh} + \alpha_1 \text{Dfh} + \beta_1 \text{Rm} + \gamma_1 \text{Agef} + \delta_1 \text{Am} + \sigma \text{InfoFP} + \eta \text{InfoCP} + \mu \text{Nch} + \lambda_1 \text{Reli} + \omega_1 \text{Deci} + \omega_1 \text{Deci} + \varepsilon \]  \hspace{1cm} (4)

The Equation is presented as following:

\[ Y^* = \alpha_0 + \alpha_1 \text{educ} + \alpha_2 \text{educ2} + \alpha_3 \text{educ3} + \beta_1 \text{mil} + \beta_2 \text{mil2} + \gamma_1 \text{clag1524} + \gamma_2 \text{clag2529} + \gamma_3 \text{clag3034} + \gamma_4 \text{clag3539} + \gamma_5 \text{clag4044} + \gamma_6 \text{clag4549} + \delta_1 \text{nvid051} + \delta_2 \text{nvid052} + \delta_3 \text{nvid053} + \delta_4 \text{nvid054} + \sigma \text{InfoFP} + \eta \text{InfoCP} + \mu \text{Nch} + \lambda_1 \text{Relig1} + \lambda_2 \text{Relig2} + \lambda_3 \text{Relig3} + \lambda_4 \text{Relig4} + \lambda_5 \text{Relig5} + \omega_{\text{decision1}} + \omega_{\text{decision2}} + \omega_{\text{decision3}} + \omega_{\text{decision4}} + \varepsilon. \]  \hspace{1cm} (5)

\( \text{decision1}=\text{woman makes decision for using contraceptives}; \text{decision2}=\text{husband or partner makes decision for using contraceptives}; \text{decision3}=\text{both woman and husband make decision for using contraceptives}; \text{decision4}=\text{other}, \text{educ1}=\text{no instruction}; \text{educ2}=\text{primary level}; \text{educ3}=\text{secondary and higher level}; \text{mil1}=\text{urban}; \text{mil2}=\text{rural}; \text{clag1524}=\text{class of age between 15 and 24 years old}; \text{clag2529}=\text{class of age between 25 and 29 years old}; \text{clag3034}=\text{class of age between 30 and 34 years old}; \text{clag3539}=\text{class of age between 35 and 39 years old}; \text{clag4044}=\text{class of age between 40 and 44 years old}; \text{clag4549}=\text{class of age between 45 and 49 years old}; \text{nvid051}=\text{very poor}; \text{nvid052}=\text{poor}; \text{nvid053}=\text{middle}; \text{nvid054}=\text{rich}; \text{InfoFP}=\text{Information about Family planning and its Economic advantages}; \text{InfoCP}=\text{Information about place to obtain contraception and types of methods}; \text{Nch}=\text{Number of children}; \text{Relig1}=\text{Christians}; \text{Relig2}=\text{Muslim}; \text{Relig3}=\text{animist}; \text{Relig4}=\text{No religion}; \text{Relig5}=\text{Other}.

\( \alpha; \beta; \gamma; \delta; \sigma; \eta; \mu; \lambda; \omega \) are regressions coefficients or parameters and \( \varepsilon \) error term.

In this study, the probit model is estimated by the Maximum Likelihood Procedure.
Table 1. Specification of variables

| Variables               | Definition                                                                 | Range value and unit | Expected sign |
|-------------------------|---------------------------------------------------------------------------|----------------------|---------------|
| Me                      | The probability of using modern contraceptive methods is the dependent variable. | Variable, in the database records V313, the variable is taken 3=modern method. We recode into method 1=Yes, 0=No. | (+)           |
| Deci, Decision-making for using contraception | Decision of the use of contraceptive methods decision1= woman makes decision for using contraceptives; decision2= Husband or male partner makes decision for using contraceptives; decision3= both woman and husband make decision for using contraceptives and decision4=other. | We recode V632 into decision 1; decision2; decision3 and decision4. They take two values, 1=yes, 0=No. | (+)           |
| D<sub>hn</sub>, Human capital of woman; | Human capital endowment Level of education. The formal education levels are represented by three modalities –no instruction; primary level; secondary and higher level, which takes into account the level of schooling attained by a woman. | We recode V106 into edul=no instruction; educ2=primary; educ3=secondary and higher. They take two values 1=yes, 0=No. | (+)           |
| R<sub>mn</sub>, Residence environment | The living environment where the woman lives. mil1= urban; mil2= rural. | It's available in the database, we recode V025 into mil1=urban; mil2=rural. They take two values; 1=yes, 0=No. | (+)           |
| Age<sub>c</sub>, Class of age | Age of women represented by six classes of age. clag1524= class of age between 15 and 24 years old; clag2529= class of age between 25 and 29 years old; clag3034= class of age between 30 and 34 years old; clag3539= class of age between 35 and 39 years old; Clag4044= class of age between 40 and 44 years old; clag4549= class of age between 45 and 49 years old. | We recode V013 into groups of age. They take two values; 1=Yes, 0=No. | (+)           |
| A<sub>n</sub>, Assets | Assets or property owned by the household such as refrigerator, | We have built a wealth | (+)           |
4. Results

It concerns the results of statistic analysis and econometric analysis.
4.1. Statistics descriptives

Table 2. Number of users by types of methods. \( N = 10,060 \) = the total number of respondents

| Type of Methods     | Number of Users | Percentage of Users (%) |
|---------------------|-----------------|-------------------------|
| None                | 8170            | 81.22                   |
| Folkloric Method    | 84              | 0.83                    |
| Traditional Method  | 445             | 4.42                    |
| Modern Method       | 1361            | 13.53                   |
| Total               | 10,060          | 100.00                  |

Source: DHS-MICS-2012-CI data - IBM SPSS statistics 20 Software used

Table 2 above shows that out of the sample of 10,060 women, 8170 women do not use any contraceptive method that is 81.2% of non-users. Only 18.8% use contraceptive methods. This result shows that the rate of using contraceptive method is still very low in Côte d'Ivoire despite the efforts made by the government.

The number of women using different methods varies; 0.83% of them practice Folkloric methods (for example: Lactational amenorrhea); 4.42% of the users use traditional methods (for example: the calendar method) and 13.53% of women use modern methods (for example the oral pill).

Figure 1. Number of users by types of methods

![Number of users by types of methods](image)

Source: Data of table 2 – Excel used

Table 3. Number of users by types of modern methods. \( N = 1361 \) = total number of modern methods users

| Types of Modern Methods    | Number of Users | Percentage of Users (%) |
|----------------------------|-----------------|-------------------------|
| Pill                       | 597             | 43.86                   |
| IUD (Intra-Uterine Device) | 11              | 0.82                    |
| Implants                   | 12              | 0.88                    |
| Injection                  | 193             | 14.18                   |
| Sterilization              | 4               | 0.30                    |
| Condom                     | 482             | 35.41                   |
| Others                     | 62              | 4.55                    |
| Total                      | 1361            | 100                     |

Source: DHS-2012-CI data – IBM SPSS statistics 20 Software used
In total 1361 women use modern contraception and 8699 do not use it. In the database, the different types of modern contraceptive products used by women are Pill, IUD (Intra-Uterine Device), Implants, Injection, Sterilization, Condom and Others. The distribution of the number of users according to the type is done in descending order of importance: Pill (43.86%); Condom (35.41%); Injection (14.18%); others (4.55%); Implants (0.88%); IUD (0.82%); Sterilization (0.30%) (See Figure 2).

First, the results in Table 3 above reveal that oral Pill is the main modern method of contraception in Côte d'Ivoire. In other words, oral contraception is the most used mode by women in Côte d'Ivoire. Second, the condom is the second method of contraception used by couples in Côte d'Ivoire to prevent unwanted pregnancies. Finally, injectable contraception remains the third method practiced in Côte d'Ivoire.

Table 4. The number of users of modern contraception by decision-making and others socioeconomic, demographic and cultural categories

| Variables                  | Number of women | Percentage (%) | Number of users | Percentage of Users (%) |
|----------------------------|-----------------|----------------|-----------------|-------------------------|
| Decision making by woman   | 420             | 4.2            | 245             | 58.53                   |
| Decision making by husband | 161             | 1.6            | 128             | 78.50                   |
| Joint decision             | 467             | 4.6            | 354             | 75.80                   |
| Other                      | 14              | 0.1            | 14              | 100.00                  |
| No instruction             | 5744            | 57.10          | 505             | 100.00                  |
| Primary                    | 2347            | 23.30          | 413             | 17.60                   |
| Secondary and higher       | 1969            | 19.6           | 443             | 22.50                   |
| Very poor                  | 2220            | 22.1           | 199             | 8.96                    |
| Poor                       | 1719            | 17.1           | 203             | 11.80                   |
| Middle                     | 1597            | 15.9           | 178             | 11.14                   |
| Rich                       | 4524            | 45.0           | 781             | 17.26                   |
| Urban                      | 4595            | 45.7           | 828             | 18.01                   |
| Rural                      | 5465            | 54.3           | 533             | 9.75                    |
| Age 15-24                  | 3984            | 39.6           | 546             | 13.70                   |
| Age 25-29                  | 1862            | 18.5           | 307             | 16.49                   |
| Age 30-34                  | 1478            | 14.7           | 214             | 14.48                   |
| Age 35-39                  | 1142            | 11.4           | 165             | 14.45                   |
| Age 40-44                  | 887             | 8.8            | 97              | 10.94                   |
| Age 45-49                  | 707             | 7.0            | 32              | 4.52                    |
| Christians                 | 4295            | 42.7           | 724             | 16.86                   |
| Muslims                    | 4312            | 42.9           | 508             | 11.78                   |
| Animists                   | 305             | 3.0            | 20              | 0.656                   |
| No religion                | 1017            | 10.1           | 91              | 0.895                   |
| Other                      | 133             | 1.3            | 18              | 13.53                   |
| Information about Family planning | 2277       | 22.6           | 511             | 22.44                   |
| Information about contraceptives methods | 1958     | 19.5           | 464             | 23.70                   |

Source: Data of table 3 – Excel used

Source : DHS-2012-CI data – StataSE 14 software used
4.1.1. Socio-economic and cultural characteristics of respondents

On the one hand, the table 4 above highlights the socioeconomic and cultural characteristics of women of reproductive age in Côte d'Ivoire. 57.10% of women have no education; 23.3% of them have primary level and 19.6% of them have secondary level and higher. We also have 22.1% of very poor women; 17.1% of them are poor; 15.9% of them have a middle standard of living and 45.0% of women are wealthy compared to the categories of women surveyed. Indeed, concerning the calculation of the standard of living, we did not take into account the income but rather the durable good possessed in the households, the level of precariousness of the sanitary environment and the habitat (precarious or not) were be taken account. 45.7% of women live in urban areas versus 54.3% in rural areas. We recorded 39.6% of them aged between 15 and 24 years old; 18.5% of them aged 25 to 29 years old; 14.7% of women are between 30 and 34 years old; 11.4% of them aged 35 to 39 years old; 8.8% of women aged 40 to 44 years old and 7.0% of them are between 45 and 49 years old. We have 42.7% of women are Christians; 42.9% of them are Muslim, 3.0% of women are animists; 10.1% of women have no religion and 1.3% of them belonging to other type of religion. Regarding the level of knowledge of family planning, 22.6% of women are registered and 19.5% of them have information on contraception. At the decision-making level, 4.2% of women have decision-making power over contraception; 1.6% of husbands decide; 4.2% of couples decide and 0.1% of couples are influenced by other people. This explains the rate of reticence of couples in terms of contraceptive practice (see Figure 1).

4.1.2. Percentage of modern contraceptive users by socioeconomic and cultural characteristics

On the other hand, the table 4 above indicates relevant determinants of modern contraceptive use. Overall, the proportions of users of modern contraceptive methods vary by different characteristics. This table calls for several comments:

Firstly, the decision-making power of husbands is stronger than that of women in terms of using of contraception. When women decide to take contraceptive products, the rate is 58.33%. When the decision is made by the husband or male partner, the rate is 78.50%. The rate is estimated at 75.80%, when the two partners jointly decide (See figure 3). Concerning other type of decision, the rate is 100%. The latter result means that when the provider participate in the decision-making process in a way that emphasized the women's values and preferences; the rate of contraceptive increases (Steyn, 2016). When women receive comprehensive information about side effects clearly from an intimate, friend-like relationship with their providers, they are motivated to use contraception (Dehlendorf et al, 2013).

Secondly, the variable "education" is represented by "no instruction"; "primary" and "secondary and higher" levels of education. The statistics in Table 4 indicate that the rate of women using modern contraceptive methods increases when their level of education is higher. Similarly, the rate of modern contraceptive methods use increases when the level of education increases. Indeed, 08.79% of women who have no instruction practic modern contraception. 17.60% of women who have primary education level use modern contraceptive methods and 22.50% of women who have secondary and high education level use modern contraception.

Thirdly, the "standard of living" variable is subdivided into four categories: very poor, poor, middle and rich. Indeed, a wealth indicator was constructed from assets owned by households by the Non-linear Principal Component Analysis (ACP) method. This procedure allows each property to have a score. The distribution of these scores follows a reduced normal centered law (mean is zero and the variance is 1); since the ACP consists in reducing and centering the variables from the data available on them in a contingency table, and then finding a unit of analysis common to all the variables.

Centering the selected relevant variables contained in a table consists of calculating the average for each type of variable and measuring each individual in more or in less compared to this average in each variable. Reducing the variables consists of calculating the standard deviation for each of the variables and expressing them all in boxes or rows (because all the characteristics or variables are expressed in line and the individuals in column). These calculated standard deviations are negative or positive. The standard deviation thus becomes a unit of measurement common to all variables. These assigned values are then used to stratify households into four groups (in our case, in quartiles) - very poor, poor, middle and rich - the variables are ordinal - 1 = non-precarious or non-poor; 2 = precarious or poor. The variables used to identify the levels of precariousness of available assets chose are: place of comfort, access to drinking water, type of habitat, possession of a motorcycle, a radio, a refrigerator, a telephone, a Television, a car, a bicycle. The conditions of poverty are defined as follows:
Are considered poor, with a level of poverty or precariousness equal to 2:

(i) - Households that do not own durable goods such as: radio, television, refrigerator, bicycle, motorcycle, car;
(ii) - households who use water from wells (wells in the dwelling, in the yard, public wells), surface water from -spring, river, dam, pond, lake, rainwater;
(iii) – households using basic latrines, those with no toilet facilities and which used nature for their needs;
(iv) - households living in a house whose floor is made of earth, sand and wood;
(v) - households without access to electricity.

Access to land has not been taken into account because urban populations do not own land.

In Table 4, wealthy women have increased access to modern methods of contraception (17.26%) compared to those with a low standard of living (11.80%) or average (11.14%). Access to modern contraception by very poor women is very low (8.96%).

Fourthly, women living in urban areas (18.01%) use modern contraceptive methods more than counterparts in rural areas (9.75%). Fifthly, age is considered as an indicator of physical health, sexual health, and reproductive health. Age is represented by six age classes for women aged between 15 and 49 years old. The statistics in Table 4 reveal that the rate of women using modern contraception increases between the two age groups 15-24 years old (13.70%) and 25-29 years old (16.49%). The rate decreases from the age group 30-34 years old (14.48%), 35-39 years old (14.45%), 40-44 years old (10.94%) and falls down completely between 45-49 years old (4.42%).

Sixthly, rates of women using contraception are distributed according to different religions as follows: Christians (16.86%), Muslims (11.78%), and Animists (06.56%). No religion (08.95%) and other religion (13.53%).

Seventhly, 22.44% of women who received information on the economic benefits of family planning use modern contraception. 23.70% of those having received information on the place of acquisition and the types of contraception methods, use contraceptive products.

**Figure 3. The number of users of modern contraception by decision- making and others cultural categories**

![Figure 3](image)

Source: Data of table 4 – Excel used

**Figure 4. The number of users of modern contraception by different socioeconomic demographic and Cultural categories**

![Figure 4](image)

Source: Data of table 4 – Excel used
4.2. Econometric analysing

**Table 5. Regression coefficient estimates and marginal effects of the determinants of usage of contraceptives in Côte d'Ivoire. – Result of Probit model- STATA SE 14 software used**

| Parameters Variables | $\beta$   | $t^2$  | Ef.$mg^2$ |
|----------------------|-----------|--------|-----------|
| Constant             | -2.5336   | -13.55*** | 0.0788*** |
| Woman’s decision     | 1.8998    | 27.22*** | 0.5904*** |
| Husband’s decision   | 2.4840    | 21.48*** | 0.7756*** |
| Joint decision       | 2.3635    | 33.13*** | 0.7359*** |
| Primary level        | 0.3027    | 6.19***  | 0.0315*** |
| Secondary and higher | 0.4831    | 8.83***  | 0.0670*** |
| Information about FP | 0.0094    | 0.12    | 0.0013    |
| Information about Cp | 0.0207    | 2.50***  | 0.0323*** |
| Age 15-24            | 0.6885    | 5.23***  | 0.1134*** |
| Age 2.5-29           | 0.5747    | 4.47***  | 0.1082*** |
| Age 30-34            | 0.5071    | 4.00***  | 0.0950*** |
| Age 35-39            | 0.4103    | 3.19***  | 0.0748*** |
| Age 40-               | 0.2403    | 1.78**   | 0.0405*** |
| Urban                | 0.2650    | 5.24***  | 0.0397*** |
| Very poor           | 0.0281    | 0.48     | 0.0042    |
| Poor                 | 0.1220    | 2.02***  | 0.0189*** |
| Middle               | -0.0662   | -1.09    | -0.0094   |
| Christian            | 0.1922    | 1.57*    | 0.2566*   |
| Muslim               | -0.1076   | -1.38*** | -0.0160***|
| Animist              | -0.0080   | -0.09    | -0.0012   |
| No Religion          | -0.0316   | -0.23    | -0.0045   |
| Number of children   | -0.0252   | -1.92**  | -0.0037** |

Log likelihood
-2643.2676
LR chi2(20)
2687.37
Prob>chi2
0.0000
Pseudo R$^2$
0.3370

(1) In the estimation of probit model, the dependent variable is the probability of contraceptiv method use; (2) two-tailed probability that the coefficient is equal to zero; the $t$ is the ratio between $\beta$ and standard error; (3) Marginal effects are partial derivatives of the characteristics; (4) Decision of using contraceptive: base=Decision4=other; (5) Level of education: base=No education; (6) Information about Family planning: yes=1, 0=N0; (7) Information about contraceptive methods: yes=1, 0 =No; (8) Classes of age: base =clag4549; (9) Residence environment: base=mil2=rural (10) Poverty: base= Nvie054=rich; (11) religion of woman: base=relig5=other religion; (12) number of children. Note: *** = significant between 0 and 5%; ** =significant between 5 and 10%; *= significant between 10 and 15%.

5. Discussion and Conclusion

5.1. Discussion

The results in Table 5 suggest several comments:

Firstly, when the decision to use contraceptive methods is made by the woman, or by the husband or both, the chances of practicing modern contraception are very high. The coefficients associated with these variables are positive and very significant. Indeed, all things being equal, when woman has the decision–making power, she has much greater chance to use contraceptive products and the probability of using contraception increases by 0.59 points (Belay et al, 2016). All things being equal, when husband has the decision–making power, the probability of using modern contraception increases by 0.77 points. All things being equal, when both decide jointly, the probability of using contraceptive methods increases by 0.73 points. These results show that the main decision-maker is the husband.

These results corroborate with those found by Mutombo and Bakibinga (2014), who focus on the importance of male partners in women’s contraceptive decision-making. Decision-making power in couples has a strong positive impact on using contraceptive methods.
When by advertising or campaigns on the usage of contraception, men and women in the household agree to choose periods of having children or to limit their number, the probability that the woman practices modern contraception increases.

Secondly, the coefficients associated with variables “primary” and “secondary and higher” are positive and significant. When a woman got formal education, she would have more chances to use contraception. This means that education plays an important role in the usage of modern contraceptives (Mochache et al, 2018). The positive effect of formal education on the usage of contraceptives can be explained in two ways:

In first, education enables women to understand the economic benefits of using modern contraceptives (Najafi-Sharjabad et al, 2016; Ochako, 2014). Indeed, contraception allows the woman to make a longer interval between births of her children. This allows to get earn enough time to manage his economic activities. The contraceptive use is a best factor of women economic empowerment (León et al, 2014). If she is employed by the public sector or by a private company, she will be more able to ensure a good professional career in order to obtain promotions accompanied by wage increases (Dharmalingam, 1995). In second, an educated woman makes a better choice between the use of modern contraceptives and abortion (Biney, 2011). Women’s risk of unsafe abortion was associated with doubtful sources of information during decision-making (Arambepola et al, 2014). Educated women have the best information about the disadvantages of unsafe abortion and choose the best way when they use modern contraception.

In general, abortion is caused by an unwanted pregnancy (Dehlendorf, 2010). Her choices and preferences are focused on the practice of modern contraceptives, which justifies the positive impact of formal education on the usage of contraceptives (Avissah et al, 2018). Formal education is a determining factor in the increase of the rate of using contraceptives (Mprah, 2013). However, the coefficient associated with variable “information about family planning” is not significant. Thirdly, the coefficient associated with variable “information about the place and the type of contraception” is positive and significant. It means that when a woman knows the place where to buy and obtain contraceptives, the probability to use contraceptives increases (Labat et al, 2018). They also have information about the types of contraception that exist. In Côte d'Ivoire, contraceptives distributed are free at public maternity centers. There are also institutions like AIBF (Ivorian Association for Family Welfare), that offer free contraceptives to women and young women aged from 15 to 49 years.

Fourthly, the probability of using contraceptive is higher when the woman is aged from 15 to 35 years than the other classes of age. Indeed, all things being equal, when a woman aged from 15 to 24 years old, from 25 to 29 years old and from 30 to 34 years old, the probability that she uses contraceptive increases respectively by 0.11 points; 0.10 points and 0.09 points. The probability of using contraceptive declines as the woman's age increases. The marginal effects show a downward trend 0.10 points [25-29 years old]; 0.09 points [30-34 years old]; 0.07 points [35-39 years old]; 0.04 points [40-44 years old]. Young women are more likely use contraception than the others groups of age (Megabiaw, 2012). At a young age, partners are sexually active. This partly justifies the high probability of using contraception.

Fifthly, the residence environment of woman influences significantly on the probability of using modern contraceptives. All things being equal, when the woman lives in urban area, the probability that she uses contraceptives increases by 0.04 points. Modern contraceptive use is two times higher among urban than rural women (Muanda et al, 2017; Kamal et al, 2013).

Sixthly, concerning economic stratification of households, the coefficient associated with “poor” remains positive and significant (see Table 5). When the woman is poor, she have some opportunities to access for contraceptives products. Indeed, In Côte d'Ivoire, distribution of contraceptives is free at public maternity centers. The coefficients associated with “very poor” and “middle” are not significant (see Table 5).

Seventhly, Christian religion has a positive effect on the probability of using contraception because the coefficient associated with this variable is positive and significant (Agadjanian, 2013). In contrast, Muslim religion has a negative impact on the probability of using contraception (Obasohan, 2015; Tigabu, 2018). Indeed, the coefficient associated with this variable is negative and very significant.

Lastly, the coefficient associated with “number of children” remains negative and significant. It means that the couple use contraception to limit births (Lakew, 2013).
5.2. Conclusion

The study highlighted the major socioeconomic and cultural determinants of the usage of modern contraceptives. These are: decision-making power, formal education, age, standard of living in terms of assets, religion, knowledge of contraceptive methods and number of children. Despite the efforts made by the government, the level of knowledge of modern contraceptive methods and the rate of usage remain low in Côte d'Ivoire. Likewise, there is a disparity between urban and rural areas in terms of access to contraceptive products. The free distribution of contraceptive products is much made in large cities, especially in Abidjan. Public maternity clinics in remote areas are neglected. So, the Ivorian government must make further efforts to reduce the regional gap. The results of the study showed that the oral pill, the condom and the injectable products are principal methods of contraception in Côte d'Ivoire. So, authorities must make efforts to ensure that pills, injectable products and condoms are always available for replenishment of users. Campaigns need to be expanded to enable people to know about the economic benefits of contraception. It is also important to involve household heads (men / women), religion leaders in advocacy and activities of sensitization for better usage of modern contraception in households. Indeed, the study reveals that the power of decision plays a very important role in the practice of modern contraception within couples. The providers must give the best counseling to the women for preferences on the modern contraception and explain them clearly the side effects of this practice. They must oblige each woman to make biologic exams or clinic exams before giving them a type of modern contraceptive because biological needs of each woman are differ. Their role is also very important to increase access to modern contraceptive to better meet the needs and satisfaction of women in family planning.

References

Agadjanian, V. (2013). Religious denomination, religious involvement, and modern contraceptive use in Southern Mozambique. Studies in family planning, 44(3), 259-274.
Ajayi, A. I., Adeniyi, O. V., & Akpan, W. (2018). Use of traditional and modern contraceptives among childbearing women: findings from a mixed methods study in two southwestern Nigerian states. BMC public health, 18(1), 604.
Ajong, A. B., Njotang, P. N., Kenfack, B., Yakum, M. N., & Mbu, E. R. (2016). Knowledge of women in family planning and future desire to use contraception: a cross sectional survey in Urban Cameroon. BMC research notes, 9(1), 347.
Ali, A. A. A., & Okud, A. (2013). Factors affecting unmet need for family planning in Eastern Sudan. BMC Public Health, 13(1), 102.
Ali, M. M., & Cleland, J. (2010). Oral contraceptive discontinuation and its aftermath in 19 developing countries. Contraception, 81(1), 22-29.
Arambepola, C., & Rajapaksa, L. C. (2014). Decision making on unsafe abortions in Sri Lanka: A case-control study. Reproductive health, 11(1), 91.
Assaf, S., Wang, W., & Mallick, L. (2017). Quality of care in family planning services in Senegal and their outcomes. BMC health services research, 17(1), 346.
Aviisah, P. A., Dery, S., Atsu, B. K., Yawson, A., Alotaibi, R. M., Rezk, H. R., & Guure, C. (2018). Modern contraceptive use among women of reproductive age in Ghana: analysis of the 2003–2014 Ghana Demographic and Health Surveys. BMC women's health, 18(1), 141.
Belay, A. D., Mengesha, Z. B., Woldegebril, M. K., & Gelaw, Y. A. (2016). Married women’s decision making power on family planning use and associated factors in Misan-Aman, South Ethiopia: a cross sectional study. BMC women's health, 16(1), 12.
Biney, A. A. (2011). Exploring contraceptive knowledge and use among women experiencing induced abortion in the Greater Accra Region, Ghana. African journal of reproductive health, 15(1), 256.38.
Darroch, J. E., & Singh, S. (2013). Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: an analysis of national surveys. The Lancet, 381(9879), 1756-1762.
Dehendorf, C., Levy, K., Kelley, A., Grumbach, K., & Steinauer, J. (2013). Women's preferences for contraceptive counseling and decision making. Contraception, 88(2), 250.
Dharmalingam, A. (1995). The social context of family planning in a South Indian village. International Family Planning Perspectives, 98-103.45.
Fassassi, R. (2007). Les facteurs de la contraception en Côte d'Ivoire au tournant du siècle : analyse des données de l'enquête démographique et de santé de 1994.
Fotso, J. C., Izugbara, C., Saliku, T., & Ochako, R. (2014). Unintended pregnancy and subsequent use of modern contraceptive among slum and non-slum women in Nairobi, Kenya. BMC pregnancy and childbirth, 14(1), 224.

Ganatra, B., Gerds, C., Rossier, C., Johnson Jr, B. R., Tunçalp, Ö., Assifi, A., & Bearak, J. (2017). Global, regional, and subregional classification of abortions by safety, 2010–14: estimates from a Bayesian hierarchical model. The Lancet, 390(10110), 2372-2381.

Gauthier, A. H. (2007). The impact of family policies on fertility in industrialized countries : a review of the literature. Population research and policy review, 26(3), 323-346.

Gueye, A., Speizer, I. S., Corroon, M., & Okigbo, C. C. (2015). Belief in family planning myths at the individual and community levels and modern contraceptive use in urban Africa. International perspectives on sexual and reproductive health, 41(4), 191-29.

Happel, S. K., Hill, J. K., & Low, S. A. (1984). An economic analysis of the timing of childbirth. Population studies, 38(2), 299-311.

Jacobstein R, Curtis C, Spieler J, Radloff S. Meeting the need for modern contraception : effective solutions to a pressing global challenge. International Journal of Gynecology & Obstetrics. 2013 ; 121(S1).

Kamal, S. M., & Hassan, C. H. (2013). Socioeconomic correlates of contraceptive use among the ethnic tribal women of Bangladesh : does sex preference matter ? Journal of family & reproductive health, 7(2), 73-55.

Labar, A., Medina, M., Elhasseim, M., Karim, A., Jalloh, M. B., Drameh, M., & Dickson, K. E. (2018). Contraception determinants in youths of Sierra Leone are largely behavioral. Reproductive health, 15(1), 66-52.

Lakew, Y., Reda, A. A., Tamene, H., Benedict, S., & Deribe, K. (2013). Geographical variation and factors influencing modern contraceptive use among married women in Ethiopia: evidence from a national population based survey. Reproductive health, 10(1), 52.

Lan, C. W., & Tavrow, P. (2017). Composite measures of women's empowerment and their association with maternal mortality in low-income countries. BMC pregnancy and childbirth, 17(2), 337.

Leite, I. C., & Gupta, N. (2007). Assessing regional differences in contraceptive discontinuation, failure and switching in Brazil. Reproductive Health, 4(1), 6.26.

León, F. R., Lundgren, R., Sinai, I., Sinha, R., & Jennings, V. (2014). Increasing literate and illiterate women’s met need for contraception via empowerment: a quasi-experiment in rural India. Reproductive health, 11(1), 74.

Megabiaw, B. (2012). Awareness and utilization of modern contraceptives among street women in North-West Ethiopia. BMC women's health, 12(1), 31.

Mochache, V., Lakhani, A., El-Busaidy, H., Temmerman, M., & Gichangi, P. (2018). Pattern and determinants of contraceptive usage among women of reproductive age from the Digo community residing in Kwale, Kenya : results from a cross-sectional household survey. BMC women's health, 18(1), 10.41.

Mohamed, S. F., Izugbara, C., Moore, A. M., Mutua, M., Kimani-Murage, E. W., Ziraba, A. K., & Egesa, C. (2015). The estimated incidence of induced abortion in Kenya: a cross-sectional study. BMC pregnancy and childbirth, 15(1), 185.11.

Mota, K., Reddy, S., & Getachew, B. (2015). Unmet need of long-acting and permanent family planning methods among women in the reproductive age group in shashemene town, Oromia region, Ethiopia: a cross sectional study. BMC women's health, 15(1), 51.

Mprah, W. K. (2013). Knowledge and use of contraceptive methods amongst deaf people in Ghana. African journal of disability, 2(1).51.

Msolvela, J., & Tengia–Kessy, A. (2016). Implementation and acceptability of strategies instituted for engaging men in family planning services in Kibaha district, Tanzania. Reproductive health, 13(1), 138.24.

Muanda, M. F., Ndongo, G. P., Messina, L. J., & Bertrand, J. T. (2017). Barriers to modern contraceptive use in rural areas in DRC. Culture, health & sexuality, 19(9), 1011-1023.

Mutombo, N., & Bakibinga, P. (2014). The effect of joint contraceptive decisions on the use of Injectables, Long-Acting and Permanent Methods (ILAPMs) among married female (15–49) contraceptive users in Zambia: a cross-sectional study. Reproductive health, 11(1), 51.

Najafi-Sharjabad, F., Yahya, S. Z. S., Hejar Abdul Rahman, M. H., & Manaf, R. A. (2013). Barriers of modern contraceptive practices among Asian women: A mini literature review. GlobalJournal of health science, 5(5), 181.

Nzokirishaka, A., & Itua, I. (2018). Determinants of unmet need for family planning among married women of reproductive age in Burundi: a cross-sectional study. Contraception and reproductive medicine, 3(1), 11.20.
Ochako, R., Izugbara, C., Okal, J., Askew, I., & Temmerman, M. (2016). Contraceptive method choice among women in slum and non-slum communities in Nairobi, Kenya. BMC women's health, 16(1), 35.43.

Prata, N., Gessessew, A., Cartwright, A., & Fraser, A. (2011). Provision of injectable contraceptives in Ethiopia through community-based reproductive health agents. Bulletin of the World Health Organization, 89, 556-564.

Sedgh, G., Singh, S., & Hussain, R. (2014). Intended and unintended pregnancies worldwide in 2012 and recent trends. Studies in family planning, 45(3), 301-314.

Shah, I., & Åhman, E. (2009). Unsafe abortion: global and regional incidence, trends, consequences, and challenges. Journal of Obstetrics and Gynaecology Canada, 31(12), 1149-1158.

Singh, S., Bankole, A., & Darroch, J. E. (2017). The impact of contraceptive use and abortion on fertility in sub-Saharan Africa: estimates for 2003–2014. Population and development review, 43(Suppl 1), 141.

Singh, S., & Darroch, J. E. (2012). Adding it up: Costs and benefits of contraceptive services. Guttmacher Institute and UNFPA.

Stephenson, R., Koenig, M. A., Acharya, R., & Roy, T. K. (2008). Domestic violence, contraceptive use, and unwanted pregnancy in rural India. Studies in family planning, 39(3), 177-186.

Steyn, P. S., Cordero, J. P., Gichangi, P., Smit, J. A., Nkole, T., Kiarie, J., & Temmerman, M. (2016). Participatory approaches involving community and healthcare providers in family planning/contraceptive information and service provision: A scoping review. Reproductive Health, 13(1), 88.35.

Tigabu, S., Demelew, T., Seid, A., Sime, B., & Manyazewal, T. (2018). Socioeconomic and religious differentials in contraceptive uptake in western Ethiopia: a mixed-methods phenomenological study. BMC women’s health, 18(1), 85.58.

Tiruneh, F. N., Chuang, K. Y., Ntenda, P. A., & Chuang, Y. C. (2016). Factors associated with contraceptive use and intention to use contraceptives among married women in Ethiopia. Women & health, 56(1), 1-22.19.

UNFPA, (2009), Rapport Annuel. 2009. [Online]. Available https://www.unfpa.org/sites/default/files/pub-pdf/annualreport_09_fr.pdf. (Aug 10, 2009).

Abbreviations

WHO: World Health Organization
INS: National Institute of Statistics
DHS: Demographic Health Survey.
DHS-CI: Demographic Health Survey in Côte d’Ivoire
HIV / AIDS: Human Immunodeficiency Virus Infection / Acquired Immunodeficiency Syndrome
STIs: Sexually transmitted infections
ACP: Principal Component Analysis
AIBF: Ivorian Association for Family Welfare
Appendice

The types of methods

| Method        | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------------|-----------|-------------|--------------------|--------------------|
| no Method     | Valide    | 1890        | 18,8               | 18,8               |
|               | Total     | 10060       | 100,0              | 100,0              |
| Folkloric Method |          |             |                    |                    |
|               | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|               | 99,2       | 99,2        | 99,2               |
|               | 8,8        | 8,8         | 100,0              |
|               | 100,0      | 100,0       |                    |
| Traditional Method |        |             |                    |                    |
|               | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|               | Valide    | 9615        | 95,6               | 95,6               |
|               | Total     | 10060       | 100,0              | 100,0              |
| Modern method | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|               | Valide    | 8699        | 86,5               | 86,5               |
|               | Total     | 10060       | 100,0              | 100,0              |

1- The types of modern Methods

| Method | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|--------|-----------|-------------|--------------------|--------------------|
| pill   | Valide    | 9463        | 94,1               | 94,1               |
|        | Total     | 10060       | 100,0              | 100,0              |
IUD

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 10049       | 99,9               | 99,9               |
| Valide    | 11          | ,1                 | ,1                 |
| Total     | 10060       | 100,0              | 100,0              |

injection

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 9867        | 98,1               | 98,1               |
| Valide    | 193         | 1,9                | 1,9                |
| Total     | 10060       | 100,0              | 100,0              |

condom

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 9578        | 95,2               | 95,2               |
| Valide    | 482         | 4,8                | 100,0              |
| Total     | 10060       | 100,0              | 100,0              |

sterilization

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 10056       | 100,0              | 100,0              |
| Valide    | 4           | ,0                 | ,0                 |
| Total     | 10060       | 100,0              | 100,0              |

implants

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 10048       | 99,9               | 99,9               |
| Valide    | 12          | ,1                 | ,1                 |
| Total     | 10060       | 100,0              | 100,0              |
### 2- Éducation

#### sans instruction

|         | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------|-----------|-------------|--------------------|--------------------|
| Valide  | 4316      | 42,9        | 42,9               | 42,9               |
| Total   | 10060     | 100,0       | 100,0              |                    |

#### primaire

|         | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------|-----------|-------------|--------------------|--------------------|
| Valide  | 7713      | 76,7        | 76,7               | 76,7               |
| Total   | 10060     | 100,0       | 100,0              |                    |

#### secondaire et plus

|         | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------|-----------|-------------|--------------------|--------------------|
| Valide  | 8091      | 81,5        | 81,5               | 81,5               |
| Total   | 10060     | 100,0       | 100,0              |                    |

### 3- Classes of Age

#### clag1524

|         | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------|-----------|-------------|--------------------|--------------------|
| Valide  | 6076      | 60,4        | 60,4               | 60,4               |
| Total   | 10060     | 100,0       | 100,0              |                    |

#### clag2529

|         | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------|-----------|-------------|--------------------|--------------------|
| Valide  | 8198      | 81,5        | 81,5               | 81,5               |
| Total   | 10060     | 100,0       | 100,0              |                    |
### clag3034

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 8582        | 85,3               | 85,3               |
| Valide 1,00 | 1478        | 14,7               | 14,7               |
| Total     | 10060       | 100,0              | 100,0              |

### clag3539

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 8918        | 88,6               | 88,6               |
| Valide 1,00 | 1142        | 11,4               | 11,4               |
| Total     | 10060       | 100,0              | 100,0              |

### clag4044

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 9173        | 91,2               | 91,2               |
| Valide 1,00 | 887         | 8,8                | 8,8                |
| Total     | 10060       | 100,0              | 100,0              |

### 4. Residence environment urbain

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 5465        | 54,3               | 54,3               |
| Valide 1,00 | 4595        | 45,7               | 45,7               |
| Total     | 10060       | 100,0              | 100,0              |

### rural

| Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-----------|-------------|--------------------|--------------------|
| ,00       | 4595        | 45,7               | 45,7               |
| Valide 1,00 | 5465        | 54,3               | 54,3               |
| Total     | 10060       | 100,0              | 100,0              |
## 5- Religion

| Religion       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| Muslim         | 4312      | 42,9        | 42,9               | 42,9               |
| Catholic       | 2014      | 20,0        | 20,0               | 62,9               |
| Methodist      | 208       | 2,1         | 2,1                | 65,0               |
| Evangelical    | 1719      | 17,1        | 17,1               | 82,0               |
| Other Christian| 352       | 3,5         | 3,5                | 85,5               |
| Animist        | 305       | 3,0         | 3,0                | 88,6               |
| No religion    | 1017      | 10,1        | 10,1               | 98,7               |
| Other          | 133       | 1,3         | 1,3                | 100,0              |
| Total          | 10060     | 100,0       | 100,0              |                    |

## 6- Possession durable assets

### radio

| Type          | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------------|-----------|-------------|--------------------|--------------------|
| V précaire    | 4177      | 41,5        | 41,5               | 41,5               |
| Non précaire  | 5883      | 58,5        | 58,5               | 100,0              |
| Total         | 10060     | 100,0       | 100,0              |                    |

### telev

| Type          | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|---------------|-----------|-------------|--------------------|--------------------|
| Précaire      | 5401      | 53,7        | 53,7               | 53,7               |
| Non précaire  | 4659      | 46,3        | 46,3               | 100,0              |
| Total         | 10060     | 100,0       | 100,0              |                    |
### refri

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|-------------------|
| Précaire       | 8520      | 84,7        | 84,7               | 84,7              |
| Non précaire   | 1540      | 15,3        | 15,3               | 100,0             |
| Total          | 10060     | 100,0       | 100,0              |                   |

### teleph

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|-------------------|
| Précaire       | 9713      | 96,6        | 96,6               | 96,6              |
| Non précaire   | 347       | 3,4         | 3,4                | 100,0             |
| Total          | 10060     | 100,0       | 100,0              |                   |

### bicy

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|-------------------|
| Précaire       | 5627      | 55,9        | 55,9               | 55,9              |
| Non précaire   | 4433      | 44,1        | 44,1               | 100,0             |
| Total          | 10060     | 100,0       | 100,0              |                   |

### moby

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|-------------------|
| Précaire       | 7154      | 71,1        | 71,1               | 71,1              |
| Non précaire   | 2906      | 28,9        | 28,9               | 100,0             |
| Total          | 10060     | 100,0       | 100,0              |                   |

### auto

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|-------------------|
| Précaire       | 9601      | 95,4        | 95,4               | 95,4              |
| Non précaire   | 459       | 4,6         | 4,6                | 100,0             |
| Total          | 10060     | 100,0       | 100,0              |                   |
7- Health environment

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| précèrere       | 8251      | 82,0        | 82,0               | 82,0               |
| Valide          | 1809      | 18,0        | 18,0               | 100,0              |
| Total           | 10060     | 100,0       | 100,0              |                    |

8- Habitat

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| trèspèrèrere   | 2173      | 21,6        | 21,6               | 21,6               |
| précèrere       | 6639      | 66,0        | 66,0               | 87,6               |
| Valide          | 1248      | 12,4        | 12,4               | 100,0              |
| Total           | 10060     | 100,0       | 100,0              |                    |

9- Nonlinear Principal Component Analysis Method

Points des objets étiquetés par Nombres d’observations

Normalisation principale de la variable.
Saturations

|                | Dimension 1 | Dimension 2 |
|----------------|-------------|-------------|
| habitat        | 0,750       | 0,027       |
| aisance        | 0,775       | -0,064      |
| causec         | 0,391       | -0,327      |
| elect          | 0,759       | -0,214      |
| radio          | 0,329       | 0,549       |
| telev          | 0,777       | 0,021       |
| teleph         | 0,439       | 0,196       |
| refri          | 0,686       | 0,162       |
| bicy           | -0,356      | 0,646       |
| moby           | 0,050       | 0,678       |
| auto           | 0,436       | 0,277       |

Normalisation principale de la variable.

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| Très pauvres  |           |             |                    |                    |
| 0,00           | 7840      | 77,9        | 77,9               | 77,9               |
| Valide         | 1,00      | 22,1        | 22,1               | 100,0              |
| Total          | 10060     | 100,0       | 100,0              |                    |
### pauvres

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| ,00   | 8341      | 82,9        | 82,9               | 82,9               |
| Valide | 1719      | 17,1        | 17,1               | 100,0              |
| Total  | 10060     | 100,0       | 100,0              |                    |

### intermédiaires

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| ,00   | 8463      | 84,1        | 84,1               | 84,1               |
| Valide | 1597      | 15,9        | 15,9               | 100,0              |
| Total  | 10060     | 100,0       | 100,0              |                    |

### riches

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| ,00   | 5536      | 55,0        | 55,0               | 55,0               |
| Valide | 4524      | 45,0        | 45,0               | 100,0              |
| Total  | 10060     | 100,0       | 100,0              |                    |

### 10- Decision maker for using contraception

### woman

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| ,00   | 9640      | 95,8        | 95,8               | 95,8               |
| Valide | 420       | 4,2         | 4,2                | 100,0              |
| Total  | 10060     | 100,0       | 100,0              |                    |

### husband

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| ,00   | 9899      | 98,4        | 98,4               | 98,4               |
| Valide | 161       | 1,6         | 1,6                | 100,0              |
| Total  | 10060     | 100,0       | 100,0              |                    |
### joint decision

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| **Valide**     | 9593      | 95,4        | 95,4               | 95,54              |
| **Total**      | 10060     | 100,0       | 100,0              | 100,0              |
| **0,00**       | 467       | 4,6         | 4,6                |                    |
| **1,00**       | 10046     | 99,9        | 99,9               | 99,9               |

### other

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| **Valide**     | 14        | ,1          | ,1                 | 100,0              |
| **Total**      | 10060     | 100,0       | 100,0              |                    |
| **0,00**       | 10046     | 99,9        | 99,9               | 99,9               |
| **1,00**       | 10016     | 99,9        | 99,9               | 99,9               |

### 11- Information on the existence of planning and the economic benefits related to this policy.

**1'oui' 0 'non'**

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| **Valide**     | 7783      | 77,4        | 77,4               | 77,4               |
| **Total**      | 10060     | 100,0       | 100,0              |                    |
| **0,00**       | 8102      | 80,5        | 80,5               | 80,5               |
| **1,00**       | 1958      | 19,5        | 19,5               | 100,0              |

### 12- Information on the place and types of contraceptives.

**1'oui' 0 'non'**

|                | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|----------------|-----------|-------------|--------------------|--------------------|
| **Valide**     | 8102      | 80,5        | 80,5               | 80,5               |
| **Total**      | 10060     | 100,0       | 100,0              |                    |
| **0,00**       | 1958      | 19,5        | 19,5               | 100,0              |
| **1,00**       | 10016     | 99,9        | 99,9               | 99,9               |
13- Total of children ever born

|       | Effectifs | Pourcentage | Pourcentage valide | Pourcentage cumulé |
|-------|-----------|-------------|--------------------|--------------------|
| 0     | 2562      | 25,5        | 25,5               | 25,5               |
| 1     | 1593      | 15,8        | 15,8               | 41,3               |
| 2     | 1383      | 13,7        | 13,7               | 55,0               |
| 3     | 1112      | 11,1        | 11,1               | 66,1               |
| 4     | 921       | 9,2         | 9,2                | 75,3               |
| 5     | 770       | 7,7         | 7,7                | 82,9               |
| 6     | 587       | 5,8         | 5,8                | 88,7               |
| 7     | 396       | 3,9         | 3,9                | 92,7               |
| Valide 8 | 302     | 3,0         | 3,0                | 95,7               |
| 9     | 214       | 2,1         | 2,1                | 97,8               |
| 10    | 126       | 1,3         | 1,3                | 99,1               |
| 11    | 57        | 0,6         | 0,6                | 99,6               |
| 12    | 29        | 0,3         | 0,3                | 99,9               |
| 13    | 3         | 0,0         | 0,0                | 100,0              |
| 14    | 3         | 0,0         | 0,0                | 100,0              |
| 15    | 2         | 0,0         | 0,0                | 100,0              |
| Total | 10060     | 100,0       | 100,0              |                    |
### tab nvie051 Method4

| pauvres | Modern method | Total |
|---------|---------------|-------|
| 0       | 6,678         | 7,840 |
| 1       | 2,021         | 2,220 |
| **Total** | **8,699**     | **10,060** |

### tab nvie052 Method4

| pauvres | Modern method | Total |
|---------|---------------|-------|
| 0       | 7,183         | 8,341 |
| 1       | 1,516         | 1,719 |
| **Total** | **8,699**     | **10,060** |

### tab nvie053 Method4

| richeses | Modern method | Total |
|----------|---------------|-------|
| 0        | 7,280         | 8,463 |
| 1        | 1,419         | 1,597 |
| **Total** | **8,699**     | **10,060** |

### tab nvie054 Method4

| richeses | Modern method | Total |
|----------|---------------|-------|
| 0        | 4,956         | 5,536 |
| 1        | 3,743         | 4,524 |
| **Total** | **8,699**     | **10,060** |

### tab educ1 Method4

| instrucio | Modern method | Total |
|-----------|---------------|-------|
| 0         | 3,460         | 4,316 |
| 1         | 5,239         | 5,744 |
| **Total** | **8,699**     | **10,060** |

### tab educ2 Method4

| primaire | Modern method | Total |
|----------|---------------|-------|
| 0        | 6,765         | 7,713 |
| 1        | 1,934         | 2,347 |
| **Total** | **8,699**     | **10,060** |
. tab educ3 Method4

| secondary et plus | Modern method | Total |
|-------------------|---------------|-------|
| 0                 | 7,173         | 8,891 |
| 1                 | 1,526         | 1,969 |
| Total             | 8,699         | 10,060|

. tab V130 Method4

| Religion          | Modern method | Total |
|-------------------|---------------|-------|
| Muslim            | 3,804         | 4,312 |
| Catholic          | 1,669         | 2,014 |
| Methodist         | 166           | 208   |
| Evangelical       | 1,439         | 1,719 |
| Other Christian   | 295           | 352   |
| Animist           | 285           | 305   |
| No religion       | 926           | 1,017 |
| Other             | 115           | 133   |
| Total             | 8,699         | 10,060|

. tab decision1 Method4

| woman             | Modern method | Total |
|-------------------|---------------|-------|
| 0                 | 8,524         | 9,640 |
| 1                 | 175           | 420   |
| Total             | 8,699         | 10,060|

. tab decision2 Method4

| husband           | Modern method | Total |
|-------------------|---------------|-------|
| 0                 | 8,666         | 9,899 |
| 1                 | 33            | 161   |
| Total             | 8,699         | 10,060|

. tab decision3 Method4

| joint decision    | Modern method | Total |
|-------------------|---------------|-------|
| 0                 | 8,586         | 9,593 |
| 1                 | 113           | 467   |
| Total             | 8,699         | 10,060|

. tab decision4 Method4

| other             | Modern method | Total |
|-------------------|---------------|-------|
| 0                 | 8,699         | 10,046|
| 1                 | 0             | 14    |
| Total             | 8,699         | 10,060|
. tab infoFP Method4

| 'oui=1'0 | Modern method |     | Total |
|---------|---------------|-----|-------|
|        | 0             | 131 |       |
|        | 1             | 176 |       |
| Total  | 8,699         | 1,361| 10,060|

. tab infoCP Method4

| 'oui=1'0 | Modern method |     | Total |
|---------|---------------|-----|-------|
|        | 0             | 145 |       |
|        | 1             | 222 |       |
| Total  | 8,699         | 1,361| 10,060|

. tab clag1524 Method4

| ages de | Modern method |     | Total |
|---------|---------------|-----|-------|
| 15-24   | 0             | 165 |       |
|         | 1             | 342 |       |
| Total   | 8,699         | 1,361| 10,060|

. tab clag2529 Method4

| ages de | Modern method |     | Total |
|---------|---------------|-----|-------|
| 25-29   | 0             | 173 |       |
|         | 1             | 312 |       |
| Total   | 8,699         | 1,361| 10,060|

. tab clag3034 Method4

| ages de | Modern method |     | Total |
|---------|---------------|-----|-------|
| 30-34   | 0             | 166 |       |
|         | 1             | 210 |       |
| Total   | 8,699         | 1,361| 10,060|

. tab clag3539 Method4

| ages de | Modern method |     | Total |
|---------|---------------|-----|-------|
| 35-39   | 0             | 170 |       |
|         | 1             | 173 |       |
| Total   | 8,699         | 1,361| 10,060|
. tab clag4044 Method4

| ages de 40-44 | Modern method |       |       |
|---------------|---------------|-------|-------|
|               | 0             | 1     | Total |
| 0             | 7,909         | 1,264 | 9,173 |
| 1             | 790           | 97    | 887   |
| Total         | 8,699         | 1,361 | 10,060|

. tab clag4549 Method4

| ages de 45-49 | Modern method |       |       |
|---------------|---------------|-------|-------|
|               | 0             | 1     | Total |
| 0             | 8,024         | 1,329 | 9,353 |
| 1             | 675           | 32    | 707   |
| Total         | 8,699         | 1,361 | 10,060|

. tab mill Method4

| urbain | Modern method |       |       |
|--------|---------------|-------|-------|
|        | 0             | 1     | Total |
| 0      | 4,932         | 533   | 5,465 |
| 1      | 3,767         | 828   | 4,595 |
| Total  | 8,699         | 1,361 | 10,060|

. tab mil2 Method4

| rural | Modern method |       |       |
|-------|---------------|-------|-------|
|       | 0             | 1     | Total |
| 0     | 3,767         | 828   | 4,595 |
| 1     | 4,932         | 533   | 5,465 |
| Total | 8,699         | 1,361 | 10,060|