Unfamiliarity the Fertile Period Among Childbearing-Aged Women in Côte d'Ivoire: Towards the Demographic Dividend

KAKOU Niaminin Martin Roger[1], N'GUESSAN Tenguel Sosthene[2]

[1]Institut National de la Statistique (INS), Côte d'Ivoire

[2] Nangui Abrogoua University, Swiss Centre for Scientific Research, Laboratoire des Sciences de l'Environnement (LSE), Laboratoire d'Études et de Recherches Interdisciplinaires en Sciences Sociales et Humaines (LERISSH), Groupe de Recherches en Socio-Anthropologie Appliquées à la Santé et au Vieillissement (GRESA)

kakoumartin@gmail.com, nguessans@yahoo.fr

Abstract

Most of the studies carried out in the field of fertility ignore the lack of knowledge of the fertile period among women of childbearing age, and those that do exist are biomedical in nature, thus leaving the sociodemographic approach on the shelf. In Côte d'Ivoire, 32% of women have a good knowledge of the fertile period against 68% with questionable knowledge. Yet, knowledge of the fertile period is important for birth control and has benefits such as avoiding drug side effects, immediate recovery of fertility and its being free of charge. This study intends to use secondary data from the 2011-2012 EDS-MICS of Côte d'Ivoire to highlight the extent to which the level of unfamiliarity with the fertile period vary among women of childbearing age and investigate related factors. The findings, based on both bivariate descriptive and multiple component factorial analyses, reveal a correlation between lack of knowledge of the fertile period and variables relating to standard of living, place of residence, religion, exposure to the media, marital status, level of education, use of birth control, and the woman's occupation. Therefore, addressing these variables, would not only help control both fertility, and family planning, but also help achieve the demographic dividend.

Keywords: Unfamiliarity, Fertile Period, Childbearing-Aged Women, Côte d'Ivoire, Demographic Dividend

1. Study Background and Rationale

Like in most African countries, the population of Côte d'Ivoire is characterized by a pro-natalist behaviour that reflects into a low rate in the use of contraceptive (WHO, 1997; Adon, 2014). The low price of modern contraceptive prevalence of around 14.3% results in high fertility (Doumbia, 2011). Indeed, despite the trends observed over the decades, the overall fertility rate is still high, rising gradually from 5.4 in 1998 (INS, 2001) to 5.0 in 2012 (INS, 2012) and then to 4.6 in 2016 (MPD, 2017). In order to control fertility, major family planning programs have been initiated, supported by a political will expressed through the development of the National Budgeted Action Plan for Family Planning in Côte d'Ivoire (Anoh, Fassassi, and Vimard, 2004; MSLS/PNSR/PF, 2014; USAID, 2017); Anonymous, 2018), following the Ouagadougou Conference on partnership to promote FP. The National Population Office (ONP) which is a state body to support population issues was established by decree n°2012-161 of 9 February 2012 to anticipate and address the major challenges related to population control with a particular emphasis on Family Planning in order to achieve a successful transition towards the demographic dividend.

With such a high fertility rate, any the development programme initiated seem to be undermined by uncontrol fertility rate, especially among girls under the age of 20, whose fertility rate remains high in the school population. Among Ivorian teenagers between 15-19 years old, the early teenage fertility rate is 129 over 1,000 teenagers (INS, 2012). As a result, the high teenage fertility rate (TFR equals 4.8), the window of opportunity envisaged by the Ivorian authorities seems to be compromised. As a matter of fact, one of the requirements of

demographic dividend remains the decline in the birth rate. The decline in fertility rate is likely to provide countries with economic growth due to the increase in the working-age population, the decline in the number of young dependents, and the absence of an aging population.

Family planning policy is considered to be an effective means of reducing the rates of premature births and maternal deaths in Côte d'Ivoire, where teenage pregnancy rates are high. 30% of girls aged 15-19 have already been pregnant, accounting for 13% to overall fertility rate in Côte d'Ivoire (INS, 2012). Moreover, early pregnancies are reported in 77% of schoolgirls aged 11-15 years (Akindes, 2016). Such an initiative must focus on knowledge of the fertile period among women of childbearing age. In fact, the fertile period is the period in the middle of the cycle or between two periods (menstruation), which can lead to fertilisation of the ovum in the event of sexual intercourse. The use of the fertile period to control births has significant benefits, including being free from medication side effects, immediate recovery of fertility, and the cost-free nature of the method. This way, knowing about fertility helps couples understand how they can avoid a pregnancy or how a woman can become pregnant (Victoria H. Jennings and al, 2007). When targeting lower overall fertility, misunderstanding the fertile period becomes an area of concern for many, given how important it is for every woman and every man to understand the value of the fertile period.

The relevance of this study is related to the fact that fertility is a component of reproductive health. There have been few sociodemographic studies on the unfamiliarity with the fertile period in the world and also in Africa. In the specific case of Côte d'Ivoire, it is clear that there are no studies on the misunderstanding of the fertile period. According to the EDS-MICS, 2011-2012, only 32% of women of childbearing age reported having a good knowledge of the fertile period compared to 68% of women reported being totally unaware of the fertile period.

The subject matter of this work is to investigate the factors that explain unfamiliarity with the fertile period among women of childbearing age.

A two-fold interest lies behind this issue: on the one hand, it constitutes a real scientific challenge, linked to the investigation of dimensions not yet fully explored by the social sciences in Côte d'Ivoire, and on the other hand, it is a source of necessary input for the design of future family planning policies and will contribute to the formulation of public policies in the field of maternal health with the aim of achieving the objectives of sustainable development.

The purpose of this study is to identify the possible main factors underlying the misunderstanding of the fertile period among women of childbearing age in Côte d'Ivoire. The aim is to help the State and its partners develop health and family planning policies designed to achieve healthier and fewer families and the demographic dividend. More specifically, this study aims to describe the differential change in poor knowledge of the fertile period among women of childbearing age, to profile mothers/women who do not know about the fertile period, and to identify the different factors behind the lack of knowledge of the fertile period among women of childbearing age.

2. Data and Methods of Analysis

This is a retrospective study based on the use of secondary data. The use of secondary data is becoming increasingly popular (Johnston, 2014) and is an "attractive avenue", as Dionne and Fleuret (2016) put it, since many of the initial data collected at high cost are poorly or not sufficiently exploited (Gaboury, Guignard Noël, Forgues and Bouchard, 2009; Smith, 2008).

This study is mainly based on data from the Demographic and Health Survey in Côte d'Ivoire (EDSCI-III) combined with the Multiple Indicator Cluster Survey (MICS), carried out by the Ministry of Health and AIDS Control (MSLS) jointly with the National Institute of Statistics (INS) and technical assistance from ICF International's global Demographic and Health Surveys (MEASURE DHS) programme in Côte d'Ivoire during the period 2011-2012. It is the third of its kind in Côte d'Ivoire and covered the entire country. The sample consisted of 10,413 households randomly selected to provide adequate representation of urban and rural areas, as well as

the eleven study areas corresponding to the ten former administrative regions and the city of Abidjan. From this sample, 9,686 households voluntarily agreed to participate in the survey. Out of this size, among an eligible sample of 10,060 women aged 15-49, some 93% representing 10,060 actually participated in the data collection. The data collection, which began in December 2011 over the entire national territory, was completed in May 2012 (INS and ICF, 2011-2012).

Two types of analysis, bivariate, and multi-component factorial analysis were performed, with respect to the objectives of the study. Accordingly, the descriptive bivariate analysis was used to assess the existence of any link between independent variables relating to behavioural variables (age at first sexual intercourse, use of contraceptive methods, media exposure, gender equality achieved), socio-cultural variables (ethnic group, religion, residency area, level of education, etc.), sociodemographic variables (marital status, age at first delivery, age of the woman) and socioeconomic variables (household life standard, the occupation of the woman) and unfamiliarity with the fertile period, regarded in this case as the dependent variable, with a threshold of 5%. Multiple component factor analysis (MCFA) was used to determine the profile of women who were unaware of the fertile period. As for the multivariate explanatory analysis, it allowed, through logistic regression, to highlight the explanatory factors of the level of unfamiliarity with the fertile period. The Statistical Package for Social Sciences software version 25 was used to process and analyse the data generating tables and establishing correlations between the different variables, the results of which are presented below.

3.   Results

3.1   Socio-demographic profile of the women unfamiliar with the fertile period

3.1.1   Household standard of living and level of unfamiliarity with the fertile period

The standard of living of the household to which the women belong is strongly linked to of the level of unfamiliarity with the fertile period at the 5% threshold. There is a change in the level of unfamiliarity with the fertile period depending on the standard of living, ranging from 78.8% among women living in households with a low standard of living (poor) to nearly 58.3 per cent among women from households with a high standard of living (wealthy). Unfamiliarity with the fertile period is high among women with a low standard of living compared to their counterparts from wealthy households.

Table 1: Standard of living and level of unfamiliarity with the fertile period

Standard of living	Unknow	Knows
Low	78,8%	21,2%
Medium	73,5%	26,5%
High	58,3%	41,7%
p=0,00		

Source: EDS-MICS, 2011-2012

3.1.2   Woman's occupation and level of unfamiliarity with the fertile period

At the 5% threshold, a woman's occupation is strongly linked to the level of knowledge of the fertile period. The more active a woman is in society, the lower the level of misunderstanding of the fertile period among women aged 15-49. For instance, women who are executive are less (29.6%) to misunderstand the fertile period as compared to those working in agriculture (80.6%). However, there is no significant difference between certain categories of occupation, including among retailer women (66.4%) and those with no activity (66.1%). These

findings suggest that women's position in the socio-professional hierarchy will determine their knowledge of the fertile period.

Table 2: Socio-professional occupation and level of unfamiliarity with the fertile period

Socio-professional occupation	Unfamiliar	Familiar
No activity	66,1%	33,9%
Executive	29,6%	70,4%
Retailer	66,4%	33,6%
Farmer	80,6%	19,4%
Housewife	75,3%	24,7%
Services	60,4%	39,6%
Qualified worker	64,7%	35,3%
Unqualified worker	77,8%	22,2%
	p=0,00	

Source: EDS-MICS, 2011-2012

3.1.3 Place of residency and misunderstanding of the fertile period

The woman's place of residency is statistically connected with the level of unfamiliarity with the fertile period at the 5% threshold. While the findings indicate that less than one in two women from all walks of life were unfamiliar with their fertile period, there are disparities in this knowledge. Thus, the women who live in urban areas have a lower level of unfamiliarity with the fertile period. Indeed, women living in rural areas have a higher level of unfamiliarity (77.8%) of the fertile period compared to those living in urban areas (59.4%).

Table 3: Women's Place of Residency and unfamiliarity with the Fertile Period

Place of residence	Unfamiliar	Familiar
Urban	59,4%	40,6%
Rural	77,8%	22,2%
p=0,00		

Source : EDS-MICS, 2011-2012

3.1.4 Women's level of education and unfamiliarity with the fertile period

Poor knowledge of the fertile period varies significantly according to the level of education at the 5% threshold. It is noticeable that the higher the level of education, the lower the level of unfamiliarity with the fertile period. In this respect, women with no education (78.7%) have a higher level of unfamiliarity compared to women with secondary education and above (43.1%).

Table 4: Women's level of education and unfamiliarity with the fertile period

Education level	Unfamiliar	Familiar
None	78,7%	21,3%
Primary	67,9%	32,1%
Secondary and higher	43,1%	56,9%
	p=0,00	

Source: EDS-MICS, 2011-2012

3.1.5 Marital status and level of unfamiliarity with the fertile period

Marital status is highly linked to the level unfamiliarity with the fertile period at the 5% threshold. All else being equal, it is found that the more women are in a relationship, the higher the level of unfamiliarity with the fertile period. Thus, women in relationships (70.4%) have a higher level of unfamiliarity with the fertile period than women who are not in relationships (64.7%).

Table 5: Marital status of women and level of unfamiliarity with the fertile period

Marital Status	Unfamiliar	Familiar
Not in relationship	64,7%	35,3%
In relationship	70,4%	29,6%
	p=0,00	

Source: EDS-MICS, 2011-2012

3.1.6 Age of the woman and level of unfamiliarity with the fertile period

A woman's age her level of unfamiliarity with the fertile period are statistically associated with the 5% threshold. Women who could be described as young people aged 15-24 (71.5%) have a higher level of unfamiliarity with the fertile period compared to older women (35-49) and young adult- women (24-35) by 68.2% and 64.7% respectively.

Table 6: Distribution of women by age group according to level of unfamiliarity with the fertile period

Age Group	Unfamiliar	Familiar
15-24 years old	71,5%	28,5%
25-34 years old	64,7%	35,3%
35-49 years old	68,2%	31,8%
p=0,00		

Source : EDS-MICS, 2011-2012

3.1.7 Age at first intercourse and level of unfamiliarity with the fertile period

Age at first intercourse and unfamiliarity with the fertile period are strongly connected at the 5% threshold. It is found that the later the age at first intercourse, the lower the level of unfamiliarity with the fertile period. Thus, lack of knowledge about the fertile period is higher among women who have not yet had sexual intercourse (78.2%) compared to women whose age at first intercourse varies between 8-18 years (67.4%) on the one hand and 19-35 years on the other hand.

Table 7: Women's age at first sexual intercourse and level of unfamiliarity with the fertile period

Age at first sexual intercourse	Unfamiliar	Familiar
Not yet had	78,2%	21,8%
Early age (8-18 years old)	67,4%	32,6%
Mature age (19-35 years old)	63,4%	36,6%
p=0,00		

Source : EDS-MICS, 2011-2012

3.1.8   Use of contraceptive methods and level of unfamiliarity with the fertile period

The analysis shows that the use of contraceptive methods is strongly linked to the level of unfamiliarity with the fertile period at the 5% threshold. The use of contraceptive methods influences the level of unfamiliarity with the fertile period. Indeed, being unfamiliar with the fertile period among women who do not use contraceptive methods (69.9) is higher than among those who do use them (58.5%).

Table 8: Contraceptive use by women and unfamiliarity with the fertile period

Contraceptive use	Unfamiliar	Familiar
No use	69,9%	30,1%
Use	58,5%	41,5%
p=0,00		

Source: EDS-MICS, 2011-2012

3.1.9   Media Exposure and unfamiliarity with the Fertile Period

The results of the analysis show that media exposure is highly linked to unfamiliarity with the fertile period at the 5% threshold. The more women are exposed to the media, the lower the level of unfamiliarity with the fertile period. Accordingly, women with low media exposure have a higher level of unfamiliarity than women with high media exposure, respectively 52.4%.

Table 9: Age at first sexual intercourse of women and level unfamiliarity with the fertile period

Medias exposure	Unfamiliar	Familiar
Low	77,4	22,6
Medium	72,2	27,8
High	52,4	47,6
p=0,00		

Source: EDS-MICS, 2011-2012

3.1.10　Achieved gender equality and unfamiliarity with the fertile period

The gender equality achieved is strongly linked to unfamiliarity with the fertile period at the 5% threshold. The higher the number of children, the lower the level of unfamiliarity with the fertile period. Women with no children at the time of the survey have a lower level of unfamiliarity (66.7%) than those with more than 6 children (75.9%).

Table 10: Distribution of women by achieved gender parity based on unfamiliarity with the fertile period

Achieved Gender Equality	Unfamiliar	Familiar
0 child	66,7	33,3
Primiparous (1 child)	65,5	34,5
Multiparous (2- 5 children)	67,6	32,4
Large multiparous (6 children and more)	75,9	24,1
	p<0,00	

Source: EDS-MICS, 2011-2012

3.2　Factors associated with unfamiliarity with the fertile period among women aged 15-49 years old

Poor knowledge of the fertile period among women aged 15-49 is associated with the woman's place of residency, the woman's occupation, the woman's level of education, the standard of living of the household to which the woman belongs, women's exposure to the media, gender equality, age at first sexual intercourse and the woman's age at the time of the survey.

Women currently living in urban areas are 1.38 times more likely to be familiar with the fertile period than those living in rural areas. The environment of residency influences women's fertility behaviour. For example, attitudes and behaviours towards fertility differ between urban and rural residents in that urban women have greater access to reproductive health services, including counselling and details on contraception, than rural women. Rural women's access to family planning services and information on contraceptive methods still proves to be limited.

Regarding women's occupation, it was found that female executive and farmers were 1.14 times and 0.68 times more likely to be inactive during the fertile period compared to female retailers.

The likelihood of becoming familiar with the fertile period among women of childbearing age varies with

education level. As a matter of fact, women with primary and secondary education are 1.58 and 3.86 times more likely to be aware of the fertile period than those without education, respectively. Educated women are more likely to be able to control the ovulation cycle. Also, education promotes awareness of the risk of sexual activity if the fertile period is not under control and prompts the woman to step back when she is not desiring a pregnancy now.

Individuals' standard of living will influence their reproductive behaviour (Akam, 2007). For example, women living in low- and middle-income households have almost the same behaviour relating to poor knowledge about the fertile period. They are more inclined to be more unfamiliar with the fertile period, as the latter are 74% and 80% less likely to be unfamiliar with the fertile period compared to those with a high standard of living. Limited access to information on reproductive health services and to contraceptive methods in terms of cost seem to accentuate the unfamiliarity with the fertile period among women of reproductive age in households with low living standards.

The media is one of the main and most widely used channels to disseminate family planning messages. Access to family planning information promotes reproductive health behavioural change. Therefore, women with moderate exposure to media programs on family planning are 87% more likely to be aware of the fertile period than those with low exposure to media programs. Exposure to the media promotes the knowledge acquisition about the control of the fertile period as a means of contraception.

Table 11: Odds ratios

Variables	OR	p<0	IC	
Place of residency				
Urban	1,38	0,00**	1,19	1,61
Rural	*Reference*			
Women's occupation				
No activity	0,96	0,59ns	0,85	1,09
Executive	1,14	0,01**	1,06	2,01
Retailer	*Reference*			
Farmer	0,68	0,00**	0,59	0,79
Housewife	0,83	0,32	0,57	1,19
Services	0,97	0,84	0,78	1,21
Qualified worker	1,26	0,06	0,99	1,6
Unqualified worker	0,72	0,18	0,44	1,16
Women education level				
None	*Reference*			
Primary school	1,58	0,00**	1,4	1,78
Secondary and higher education	3,86	0,00**	3,3	4,51
Standard of living				
Low	0,74	0,00**	0,63	0,83
Medium	0,80	0,00**	0,69	0,92
High	*Reference*			
Marital status				
Not in relationship	1,05	0,38	0,93	1,21
In relationship	*Reference*			
Medias exposure				
Low	*Reference*			
Medium	0,87	0,03**	0,77	0,99
High	1,09	0,08	0,99	1,26
Gender equality		*Reference*		

Variables	OR	p<0	IC	
0 child	0,8	0,01**	0,67	0,95
Primiparous (1 child)	1,01	0,86	0,87	1,18
Multiparous (2 -5 children)	*Reference*			
Larger multiparous (6 children and more)	0,84	0,03**	0,71	0,98
Contraceptive use				
Do not use	*Reference*			
Use	1,11	0,12	0,97	1,27
First sexual intercourse age				
Not yet had	0,41	0,00**	0,33	0,51
Early age (8-18 years old)	*Reference*			
Mature age (19-35 years old)	0,87	0,07	0,75	1,01
Age group				
15-24 years old	*Reference*			
25-34 years old	1,58	0,00**	1,38	1,81
35-49 years old	1,69	0,00**	1,43	2,01

Source: EDS-MICS, 2011-2012

Gender equality influences unfamiliarity with the fertile period among women aged 15-49. Incidentally, women without children are 80% more likely to be aware of the fertile period compared with those who are multiparous.

Unfamiliarity with the fertile period varies according to the age at first intercourse and strongly impacts it. As a result, women who have not yet had sex are 47% less likely to be aware of the fertile period than those who have had sex early between the ages of 8 and 18.

A woman's age is a crucial variable in the study of demographic behaviour and appears to be positively correlated with some demographic phenomena such as fertility. Accordingly, women aged 25-34 and 35-49 are 1.58 and 1.69 times more likely to be aware of the fertile period compared to those aged 15-24, respectively. This situation could be explained by the fact that young women (15-24 years) at this age are not sufficiently educated about reproductive health concepts, especially about contraceptive methods, including control of the fertile period.

4. Conclusion

The analysis of data from the EDS-MICS 2011-2012 helped highlight the variations in the level of unfamiliarity with the fertile period among women of childbearing age according to the variables likely to influence the phenomenon. Poor knowledge of the fertile period among women in Côte d'Ivoire is significantly associated with all the socio-demographic variables studied. This level unfamiliarity is accentuated with the standard of living, low professional qualifications or at least the hierarchy in socio-professional position, level of education, and age. The corollary of unfamiliarity is keeping high fertility rate. This implies that achieving the Demographic Dividend in Côte d'Ivoire will necessarily require fertility control through a family planning policy based on knowledge of the fertile period in order to avoid closely spaced and unwanted pregnancies. Moreover, even though these findings are interesting, it is difficult to identify specifically all the factors contributing to poor knowledge about the fertile period among women of childbearing age from a descriptive analysis. In so doing, the analysis would be more relevant using logistic regression. From this perspective, a qualitative study can provide insight into the root causes of unfamiliarity with the fertile period among women of childbearing age.

Conflict of Interest

The authors declared that they had no personal or financial relationship (s) that may have improperly influenced the writing of this article.

Authors' Contributions

The design of the project was the work of KAKOU Niaminin Martin Roger and N'Guessan Tenguel Sosthene. KAKOU Niaminin Martin Roger had the idea of the article and proceeded to the data analysis, the documentary research, and the writing of the manuscript. N'Guessan Tenguel Sosthène did the documentary research, the analysis, and the revision of the manuscript. The both authors performed the analysis and revision of the manuscript. They jointly revised the manuscript and provided additional information to enrich it. All authors have read and approved the final version of the manuscript.

Acknowledgements

References

1. Adon, K. P. (2014). Echec de l'utilisation des produits contraceptifs chez les femmes de deux districts sanitaires en Côte d'Ivoire. *African Population Studies*, *28(3)*, 248-262. http://aps.journals.ac.za

2. Anoh, A., Fassassi, R. & Vimard, P. (2004). Politique de population et planification familiale en Côte d'Ivoire In (Gautier A. (director)), Les politiques de planification familiale : Cinq expériences nationales. Paris, IRD, Centre français sur la Population et le Développement, Laboratoire Population-Environnement-Développement, 195-231.

3. Akindes, F. (2016). *Les grossesses en milieu scolaire en Côte d'Ivoire*. Abidjan, Côte d'Ivoire : Ministère de l'Education Nationale, Projet d'urgence à l'éducation de base.

4. Anonyme, (2018). La planification familiale : une pratique déterminante pour l'atteinte du dividende démographique,https://cotedivoire.unfpa.org/fr/news/la-planification-familiale-une-pratique-d%C3%A9terminante-pour-latteinte-du-dividende-d%C3%A9mographique   consulté le 3 janvier 2020

5. Doumbia, M. (2011). Le Programme National de la Santé de la Reproduction et de Planification Familiale en Côte d'Ivoire : quel avenir dans un contexte post-crise ? *Revue ivoirienne d'anthropologie et de sociologie*. *KASA BYA KASA*, *19*, 112-128

6. Dionne, E. & Fleuret, C. (2016). L'analyse de données secondaires dans le cadre d'évaluation de programme : regard théorique et expérientiel. Notes sur la recherche et les méthodes. *La Revue canadienne d'évaluation de programme*, 31.2 (Fall/automne), 253–261 doi: 10.3138/cjpe.142.000

7. Gaboury, I., Guignard N. J., Forgues, E. & Bouchard, L. (2009). Les données administratives et d'enquêtes sur l'état de santé et l'accès aux services des communautés francophones en situation minoritaire: potentiel d'analyse et état de situation. Ottawa, Consortium national de formation en santé, rapport de recherche.

8. Grimes D.A., Gallo M.F., Halpern, V., Nanda, K., Schulz, K.F., Lopez, L.M. (2012). Planification familiale au moyen de méthodes basées sur la connaissance de la fécondité, Editorial Group: , Cochrane Fertility Regulation Group, http://www.cochrane.org/fr/CD004860/planification-familiale-au-moyen-de-methodes-basees-sur-la-connaissance-de-la-fecondite,   le Consulté 18/10/2016

9. Henry, L. (1962). Connaissance de la période fertile et fécondité. In: Population, 17ᵉ année, n°3, pp. 549-550; http://www.persee.fr/doc/pop_0032-4663_1962_num_17_3_10182, consulté le 18/10/2016 http://www.onp.gouv.ci/index2.php?page=pre&num=5

10. Institut National de la Statistique & ICF International. (2012). *Enquête Démographique et de Santé et à Indicateurs Multiples de Côte d'Ivoire 2011-2012*. Calverton, Maryland, USA : INS et ICF International. Institut National de la Statistique (INS), 2005. *Enquête sur les Indicateurs du sida, Côte d'Ivoire*. Calverton, Maryland, USA : INS et ORC Marco.

11. Institut National de la Statistique & ORC Macro. (2001). *Enquête Démographique et de Santé, Côte d'Ivoire 1998-1999*. Calverton, Maryland USA : Institut National de la Statistique et ORC Macro.

12. Johnston, M.P. (2014). Secondary data analysis: A method of which the time has come. Qualitative and Quantitative Methods in Libraries, 3, 619 - 626.

13. Ministère du plan et du développement. (2017). La situation des femmes et des enfants en Côte d'Ivoire : enquête à indicateurs multiples 2016-MICS. Abidjan

14. Ministère de la santé et de la lutte contre le sida/Programme National de la santé de la reproduction/ Planification familiale. (2014). *Plan d'action national budgétisé de planification familiale Côte d'Ivoire 2015-2020*, Abidjan.

15. OMS. (1997). Profil santé de la femme en Côte d'Ivoire, Abidjan, Bureau OMS.

16. RCI. (2016). Rapport de suivi du PND

17. . Smith, E. (2008). Using secondary data in educational and social research. Berkshire, United Kingdom: Open University Press.

18. Hargot, T. (xxxx). Fertile ou infertile? L'observation du cycle féminin, http://www.reussirmavie.net/Fertile-ou-infertile-L-observation-du-cycle-feminin_a88.html, consulté le 15/10/2016.

19. 19. USAID and Transform Phare. (2017). Rapport final Analyse du Marché de Planification Familiale et des Services de Communication pour le Changement Social et Comportemental selon l'Approche du Marché Total. Abidjan.

20. 20. Victoria H. J., Arevalo, M., Kowal, D. (2007). Méthodes basées sur la connaissance de la fécondité, sous la direction de Robert A. Hatcher, James Trussell, Felicia Stewart, Anita D. Nelson, Willard Cates, Felicia Guest and Deborah Kowal, *Contraceptive Technology, 18ᵗʰ Revised Edition*, https://www.k4health.org/sites/default/.../Contraceptive%20Technology%20FRE.pd, consulté le 10/10/2016