USE OF MODERN CONTRACEPTIVE METHODS AMONG WOMEN OF CHILDBEARING AGE WHO USE HEALTH SERVICES IN ABIDJAN AND AGBOVILLE (COTE D'IVOIRE)

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ABSTRACT SHORT

Introduction: Sub-Saharan Africa has the highest maternal mortality rate, with over 542 maternal deaths per 100,000 live births. This rate is estimated at 315 deaths per 100,000 live births in Côte d'Ivoire (EDS, 2021). Several factors, including low national contraceptive prevalence estimated at 13.9%, contribute to this situation. The aim of this study was to analyze the factors associated with the use of modern contraceptive methods (MCM) among women of childbearing age attending health services.

Methodology: We conducted a cross-sectional study of 605 women of childbearing age in five health centers in Abidjan and Agboville from December 2018 to September 2019. MCM use was defined as "being on modern contraception in the survey period". Modified Poisson regression was applied to identify factors associated with MCM use using STATA version 15 software.

Results: A total of 605 women participated in our study, 45% of them aged 15-24 years. The rate of modern contraceptive use was 36%. Some 56% of clients had received family planning (FP) information at health centers. Marital status [(aPR): 0.80 (95%CI: 0.66 - 0.97)] and worship attendance [(aPR): 0.74 (95%CI: 0.62 - 0.87)] were associated with a decreased rate of MCM use. However, educational level [Primary level: (aPR): 1.86 (95%CI: 1.13 - 3.05); Secondary level: (aPR): 1.70 (95%CI: 1.04 - 2.79); Higher level: (aPR): 2.26 (95% CI: 1.38 - 3.71)] and information received about FP [(aPR): 8.05 (95% CI: 4.97 – 13.04)] were associated with an increased rate of MCM use.

Conclusion: FP programs should strengthen communication on FP, particularly through counseling sessions, and ensure that every opportunity for contact with health centers is seized to give women the right information on contraceptive methods. Measures should also be taken to increase girls' school enrolment and keep them in school.

ABSTRACT LONG

INTRODUCTION

Sub-Saharan Africa has the highest maternal mortality rate, with over 542 maternal deaths per 100,000 live births. This rate is estimated at 315 deaths per 100,000 live births in Côte d'Ivoire (EDS, 2021). Several factors, including low national contraceptive prevalence estimated at 13.9%, contribute to this situation. The aim of this study was to analyze the factors associated with the use of modern contraceptive methods (MCM) among women of childbearing age attending health services.

METHODOLOGY

1. Study framework

Our study took place by reasoned choice at the General Hospital of Yopougon Attié and the Formation Sanitaire Urbaine of Adjamé 220 housing units in Abidjan as well as at the Regional Hospital Center, the School and University Health Service and the Maternal and Infant Protection Center of Agboville.

2. Study variables

Dependent variable: was current MCM use. Women were asked whether they were on MCM at the time of the study, whether they had used contraception in the past and whether they planned to use it in the future. Women who had used contraception in the past, those who had never used it and those considering using it were merged as "current non-users" to create a binary variable with women using MCM.

Independent variable :

- Sociodemographic characteristics (age, level of education, marital status, religion, attendance, receipt of FP information/counseling at the health center)

- Reproductive characteristics (Desire for children, Number of living children, Adolescent FP approval, Unintended pregnancy, Peer pressure, Requiring condoms, Initiating contraception in the relationship)

3. **Data analysis**

MCM use was defined as "being on modern contraception in the survey period". Modified Poisson regression was applied to identify factors associated with MCM use using STATA version 15 software.

4. **Ethical considerations**

Ethical approval was granted by National Ethics Committee for Health and Life Science (CNESVS) of Côte d'Ivoire (N/Ref: IRB000111917).

RESULTS

1. **Socio-demographic and reproductive characteristics of the study population**

A total of 605 sexually active women were recruited from five selected health centers, two in Abidjan and three in Agboville. The majority were aged under 25 (45%), educated (85%), married (51%) and Christian (74%) *(Table 1).*

Table 1: *Socio-demographic characteristics of participants, Côte d'Ivoire, 2019*

Socio-demographic characteristics		
	Frequency /	Percentage (%)
Age (years)		
[15-24]	272	45
[25-34]	241	40
[35-49]	92	15
Level of education		
No schooling	89	15
Primary	127	21
Secondary	252	42
Superior	137	22
Marital status		
Never married	214	35
Married	311	51
Divorced, widowed, separated	80	17
Religion		
Muslim	159	26
Catholic	185	31
Protestant	261	43

While women overall wanted more than three children (59%), the majority had fewer than three living children (53%), and 32% were not yet mothers. Most had wanted pregnancies (88%) and were under no pressure to avoid contraceptive use (86%). They were able to insist on condom use during intercourse (62%) and to initiate contraception within their relationship (62%). They participated in Behavior Change Communication (BCC) sessions on FP (54%) and received information on MCM (56%). *(Table 3)*

Table 2: *Reproductive characteristics of participants, Côte d'Ivoire, 2019*

Reproductive factors	Frequency	Percentage (%)
Desired number of children		
1-3	251	41
+ 4	354	59
Number of living children		
None	194	32
1-3	322	53
+ 4	89	15
Unwanted pregnancy		
No	535	88
Yes	70	12
Peer pressure against MCM		
No	523	86
Yes	82	14
Be able to demand condom use		
No	231	38
Yes	374	62
Be able to initiate contraception in the relationship		
No	228	38
Yes	377	62
Behavior changes communication (BCC) sessions		
No	281	46
Yes	324	54
Information received about MCM		
No	267	44
Yes	338	56

2. Utilization of MCMs

Bivariate analysis showed an association between MCM use and education, religion, power to demand condom use during intercourse, power to initiate condom use within the relationship, negative peer pressure against MCM use, receipt of information and participation in FP BCC sessions.

Only 36% of women were on MCM at the time of the study.

Contraceptive use was lower among women with no schooling (16%; p<0.001), married (30%; p<0.001) or living alone (30%; p<0.001), Muslim (24%; p<0.001), Catholic (36%; p<0.001),

churchgoers (32%; p=0.003), those unable to require condom use during intercourse (21%; p<0.001) and initiate contraceptive use in their couple (19%; p<0.001). Non-education, being married and divorced, widowed, or separated, Muslim and Catholic religions, church attendance, inability to demand a condom during sexual intercourse and initiating contraceptive use within the couple were all factors that hindered the use of MCM.

However, contraceptive use was higher among educated women at primary (38%, p<0.001), secondary (37%; p<0.001), Superior (46%; p<0.001), single women (47%, P<0.001), Protestant women (44%, P<0.001), women who were not attending church regularly (45%, P<0.001), women who were able to require condoms during sexual intercourse (45%, P<0.001) and initiate condom use within the relationship (47%, p<0.001) *(*Table 4*)*. Thus, a higher level of education, not being married, Protestant religion, non-attendance at religious worship, power to require condom use and power to initiate its use within the relationship, favored MCM use.

Table 3: Bivariate analysis of MCM use and covariates, Côte d'Ivoire, 2019

Socio-demographic characteristics	Using MCM		Chi-Pearson / P-value
	Frequency / Percentage (%)		
	No	Yes	
Educational level			<0.001
No schooling	75 (84)	14 (16)	
Primary	79 (62)	48 (38)	
Secondary	158 (63)	94 (37)	
Superior	74 (54)	63 (46)	
Marital status			<0.001
Never married	113 (53)	101 (47)	
Married	217 (70)	94 (30)	
Divorced, widowed, separated	56 (70)	24 (30)	
Religion			<0.001
Muslim	120 (76)	39 (24)	
Catholic	119 (64)	66 (36)	
Protestant	147 (56)	114 (44)	
Worship attendance			
No	101 (55)	83 (45)	0.003
Yes	285 (68)	136 (32)	
Be able to require condom use			<0.001
No	182 (79)	49 (21)	
Yes	204 (55)	170 (45)	
Be able to initiate contraception in the relationship			<0.001
No	185 (81)	43 (19)	
Yes	201 (53)	176 (47)	

There was also a correlation between the use of modern contraceptive methods and reproductive factors. In fact, the use of MCMs was lower among women wanting more than 4 children (30%; p<0.001), those with 1-3 (34%; p<0.001) and 4 (33%; p<0.001) living children, disapproving of contraceptive use in adolescents (16%; p<0.001), not having had an unwanted pregnancy

(35%; p<0.001), not experiencing peer pressure against contraceptive use (33%; p<0.001) and not having received information about MCM at the health center (7%; p<0.001). Consequently, the desire to have and those having a large family, the disapproval of adolescent contraceptive use, the absence of unwanted pregnancy and peer pressure, and the absence of information on MCM limited contraceptive use.

On the other hand, MCM use was higher among women wishing to have 1 to 3 children (44%, p < 0.001), nulliparous women (42%), women approving of adolescent contraception use (48%, p < 0.001), those with unwanted pregnancies (46%, p < 0.001) and those who had received information on FP (59%, p < 0.001). Pressure from family and friends not to use MCM was not associated with decreased MCM use, rather it was associated with a higher share using MCM (49% vs. 33%, p < 0.001). *(Table 5).*

Consequently, the desire to have few children, nulliparity, unwanted pregnancies and information received on FP at the health center favored the use of MCM.

Table 4: *Bivariate analysis of MCM use and covariates Côte d'Ivoire, 2019 (continued)*

Reproductive factors	Using MCM		Chi-Pearson /
	Frequency / Percentage (%)		P-value
	No	**Yes**	
Childhood desire			<0.001
1-3	140 (56)	111 (**44**)	
+ 4	246 (**70**)	108 (30)	
Number of living children			<0.001
None	112 (58)	82 (**42**)	
1-3	214 (**66**)	108 (34)	
+ 4	60 (**67**)	29 (33)	
***FP* Approval at Adolescent**			<0.001
No	190 (**84**)	35 (16)	
Yes	196 (52)	184 (**48**)	
Unwanted pregnancy			
No	348 (**65**)	187 (35)	0.078
Yes	38 (54)	32 (**46**)	
Peer pressure against MCM			<0.001
No	331 (67)	167 (33)	
Yes	55 (51)	52 (**49**)	
Information received about MCM at the center			<0.001
No	248 (**93**)	19 (7)	
Yes	138 (41)	200 (**59**)	

* Family planning

3. Factors influencing MCM utilization

The adjusted model showed that the main factors associated with a lower rate of MCM use were: marital status and worship attendance. Indeed, married women had a 20% lower rate of MCM use [(aPR): 0.80 (95%CI: 0.66 - 0.97)] than never married women. Women who attended

worship had a 26% lower rate of MCM use [(aPR): 0.74 (95%CI: 0.62 - 0.87)] than those who did not *(Table 5)*. When looking at factors associated with higher MCM rate, we noted that these factors were: the woman's education level and receipt of information about FP. Indeed, educated women who attended primary school had an 86% higher rate of MCM use than those who were uneducated. [Primary level: (aPR): 1.86 (95%CI: 1.13 - 3.05). A higher rate of MCM use was also observed among women who had secondary level (aPR): 1.70 (95%CI: 1.04 - 2.79) and a higher level of education (aPR): 2.26 (95% CI: 1.38 - 3.71)] than uneducated women. Women who had received information on FP had a MCM use rate 8.05 times [(aPR): 8.05 (95% CI: 4.97 – 13.04)] higher than women who had not received any information on FP. *(Table 5)*.

Table 5: *Factors associated with MCM use, multivariate analysis*

Variables	cPR*	CI* 95%	p	aPR*	CI* 95%	P
Age groups						
[15-24 years]	1					
[25-34 years]	1.16	0.03 – 1.71	0.192			
[35-49 years]	1.10	0.80 – 1.51	0.536			
Education level						
No schooling	1			1		
Primary level	**2.40**	1.41 – 4.08	**0.001**	**1.86**	1.13 – 3.05	**0.014**
Secondary school	**2.37**	1.43– 3.94	**0.001**	**1.70**	1.04 – 2.79	**0.035**
Superior level	**2.92**	1.75– 4.89	**<0.001**	**2.26**	1.38– 3.71	**0.001**
Marital status						
Never married	1			1		
Married	0.64	0.51 – 0.79	**<0.001**	0.80	0.66 – 0.97	**0.023**
Divorced, widowed, separated	0.63	0.44 – 0.91	**0.015**	1.02	0.76 – 1.37	0.875
Religion						
Muslim	1			1		
Catholic	**1.45**	1.04 – 2.03	**0.028**	0.75	0.54 - 1,04	0.085
Protestant	**1.78**	1.31 – 2.42	**<0.001**	0.95	0.76 – 1.34	0.951
Worship attendance						
Non-attendance	1			1		
Worship attendance	0.72	0.58 – 0.88	**0.002**	0.74	0.62 – 0.87	**<0.001**
Religious rigor						
No religiosity	1					
Religiosity	0.73	0.52 – 1.01	0.058			
Condom use						
Cannot require condom	1			1		
Requires condom	**2.14**	1.63 – 2.81	**<0.001**	1.18	0.86 – 1.62	0.307
Taking the initiative						
Cannot take initiative	1			1		
Takes initiative	**2.47**	1.85 – 3.31	**<0.001**	0.97	0.69 – 1.38	0.889
Desire for pregnancy						
No unwanted pregnancy	1					
Unwanted pregnancy	1,31	0.99 – 1.73	0.061			
Role of family and friends						
No pressure	1			1		

	cPR	CI	p	aPR	CI	p
Pressure against MCM use	**1.45**	1.15 – 1.82	**0.002**	0.91	0.73 – 1.14	0.424
Receipt of information						
No information on MCM	1			1		
Information on MCM	**8.32**	5.34 – 12.94	**<0.001**	8.05	4.97 – 13.04	**<0.001**
Participation in BCC sessions						
No BCC sessions	1					
BCC sessions on FP	**7.05**	4.75 – 10.44	**<0.001**			
Desire for children						
1 to 3 children	1					
> 4 children	0.67	0.55 – 0.83	**<0.001**	0.87	0.72 – 1.04	0.118
Number of living children						
None	1					
1 to 3	0.80	0.64 - 1	0.058			
> 4	0.79	0.56 – 1.1	0.170			

*cPR: crude Prevalence Ratio
*aPR: adjusted Prevalence Ratio
*CI: confidence interval
Only variables which were significant in the bivariate analysis were used for multivariate analysis.
The variable "Participation in BCC sessions" was excluded from the adjusted model due to multicollinearity with "Receipt of information"

limitations of the study

The main limitation of this study is the fact that it was conducted within the hospital. This means that hospital prevalence cannot be interpreted as a population prevalence. The associations identified in our study are specific and cannot be generalized to the general population. This is because women who attend health centers tend to have more knowledge when it comes to health information, including family planning or participation in awareness sessions on FP. On the other hand, our approach could be a source of information bias, notably non-response, incomplete information and even social desirability or memory bias. In addition, this study is based on only 5 centers. However, our results are useful and allow us to have an idea of the use of contraception in women of reproductive age.

CONCLUSION

The present study revealed a low use of modern contraceptives among women using health centers. Marital status and religious practice were associated with decreased MCM use. While educational level and receipt of FP information at health centers improved MCM use in our study population.

It would therefore be appropriate to recommend to policies and health service providers to:

-   Encourage girls to stay in school and continue pursuing education

- Use every opportunity to visit health centers to provide more informed FP counseling messages to women who use services.
- Implement strategies in health centers to avoid missed opportunities for behavior change communication associated with modern contraceptive use.
- Implement effective integration of FP services

Future research, including qualitative studies should be conducted to identify additional and efficient strategies to improve the utilization of MCM in these sub-populations.