

Demographic and socio-economic determinants of abortion decision-making among women in Lomé (Togo): Analysis of a process

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Introduction

Pregnancies that are highly stigmatized in many African societies are often ended, because of a fear of social rejection for the woman (Amegee, 2002; Ouédraogo *et al.*, 2001). For example, premarital pregnancies, resulting in a delay of marriage and in a difficult access to reproductive health services and contraception for sexually active unmarried youth, are also often stopped illegally, to avoid a scandal or shame to families (Gbétoglo *et al.*, 2004; Guillaume, 2004; Ouédraogo *et al.*, 2001). Abortion, which allows “to be in conformity with social norms” (Amegee, 2002), would be then guided by socially acceptable circumstances to get pregnant, and by the “right time” to have a child.

In Togo, despite the evolution of the abortion law in 2006, abortion could be legally obtained only under certain conditions (rape, incest, a situation that endanger the life and health of the woman, when there is a high risk to the child to have a serious disease). However, abortion is widely used in the capital city Lomé, to regulate fertility, especially among young people (Amétépé *et al.*, 2004; N'bouke *et al.*, 2010). Studies that focused on abortion in Lomé identified some characteristics of women who had an abortion (Adjahoto *et al.*, 1999; Amegee, 1999; 2002; Amétépé *et al.*, 2004; Gbétoglo *et al.*, 2004; Urd *et al.*, 2001; Vignikin *et al.*, 2004). Three of these studies were based on our data (Amétépé *et al.*, 2004; Gbétoglo *et al.*, 2004; Vignikin *et al.*, 2004). The first revealed that the abortion risk increases with educational level, with rank of pregnancy and with number of living children (Amétépé *et al.*, 2004). Women over 25 years are less likely to have an abortion than women aged 15-19, and separated or married women are also less likely than singles. The second study showed that the risk of abortion increases with age, educational level and rank of pregnancy (Vignikin *et al.*, 2004). The third study has finally found significant effects of age, education, religion, rank of pregnancy, use of modern contraception and not being married on the risk of abortion among young women aged 15-24 years at the time of the survey (Gbétoglo *et al.*, 2004). Although these studies provide some factors that influence the use of abortion, they do not use a complete explanatory framework that takes into account all stages of the process leading to the induced abortion. They do not distinguish the differential impact of these factors explaining every step of the process.

In a context of restrictive access to legal abortion and of high use of abortion in Lomé, this study examines the demographic and socio-economic determinants of abortion decision-making, by modeling this decision as a process. Using data from a face to face survey on “Family Planning

and Induced Abortion”, conducted in 2002 among 4755 women of 15-49 in Lomé, this research examines the determinants of each stage of the process leading to abortion, the exposure to risk of pregnancy, the use of a modern contraception, and the fact that a pregnancy is declared as “unwanted” by the woman herself. Exposure to risk of pregnancy and contraceptive use are first modeled using logistic regression. The fact that a pregnancy is unwanted and abortion are then modeled using multilevel logistic regression with random effects, to control for unobserved heterogeneity and the fact that some women have had multiple pregnancies during their lifetime.

Analysis Framework of the determinants: abortion as a process

Abortion decision must be regarded as a process because the abortion takes place only if certain preconditions are met: being sexually active, using or not a contraception, having an unplanned pregnancy, decided to end the pregnancy and then having access to the abortion services (Bajos *et al.*, 2004). According to the analytical framework developed by Rossier and her colleagues (2007) for a developed country, the proximate determinants of abortion are exposure to an unplanned pregnancy, use of contraception, occurrence of an unplanned pregnancy, abortion decision-making and access to abortion services. The influence of the other determinants necessarily passes through these five.

In adapting this framework to her study on the determinants of induced abortions in India, Elul (2004) has decomposed the probability of abortion into interrelated events and behaviours that were analyzed simultaneously. However, the author modeled only the occurrence of pregnancy among married women, and abortion in case of pregnancy. In our study, we propose a framework that concerns all women, and considers the following events: exposure to the risk of pregnancy, use of modern contraception, the fact that a pregnancy that occurs is declared as “unwanted” and the abortion decision-making. We use the term “unwanted pregnancy” to refer to the reject of the pregnancy by the woman herself and her entourage (Amegee, 2002), instead of the term “unplanned pregnancy” which often refers to a contraceptive failure (Bajos *et al.*, 2004), due to the low prevalence of contraception in Africa context. In assuming that only an unwanted pregnancy is likely to be aborted (Rossier *et al.*, 2007), the abortion decision-making is approached through the probability that an unwanted pregnancy is ended by an abortion.

Based on this framework, we determine the effect of demographic and socio-economic characteristics, not only on the abortion decision-making, but also on its all previous stages. Specifically, by modeling abortion as a process, we examine how the determinants of abortion, like ethnicity, religion, generation, educational level, marital status, age, number of previous abortion and parity influence the risk to end an unwanted pregnancy, and the three other steps.

Data and methods

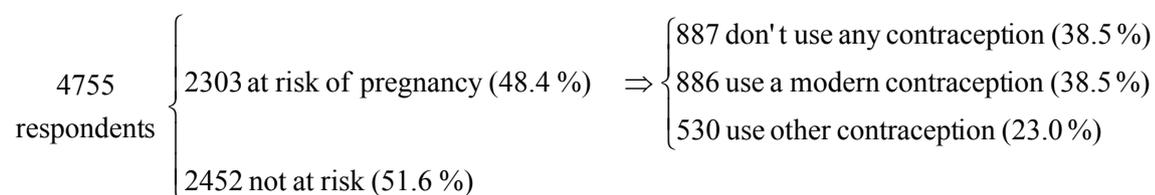
Data come from the survey on “Family Planning and Induced Abortion in Lomé” (EPAP), a population-based and face to face survey conducted in 2002 among a representative sample of women aged 15-49. The survey was organized by the “Unité de Recherche Démographique

(URD)” of the University of Lomé and the World Health Organization (WHO). It measures the impact of abortion on fertility levels and circumstances of abortions in Lomé (Urd *et al.*, 2002). Our data are rich and original. Compared to other sources that concern only married women or women attending health centers, the EPAP data were collected among 4755 women, a representative sample of female population aged 15-49 in Lomé and its environs. The survey covers women who have abortions and those who have never had it. It also provides the outcome of all women’s pregnancies. The prevalence of induced abortion appears to be high in Lomé. Of the 3230 respondents who were pregnant at least once or are pregnant at the time of the survey, 32.4% reported having resorted to an abortion. Repeat abortions are also prevalent, as 34.4% of women having had abortions have already got more than one abortion.

Four stages of the process leading to the abortion are discussed: being exposed to the risk of pregnancy, using a modern contraception, declaring a pregnancy that occurs as “unwanted”, and using an induced abortion. Because of the lack of complete biographical data, two moments are considered in our analyses, but do not affect the objectives of this study which are to see how the determinants of abortion affect the other three stages. The probabilities of the first two steps (being at risk of pregnancy and using a modern contraceptive method) are modeled for the survey time, whereas the two latest stages are modeled for the whole period of reproductive life.

All respondents of 15-49 (N = 4755) are likely to be sexually active, and therefore to be at risk of pregnancy. The first dependent variable “exposure to risk of pregnancy”, takes the value 1 if the woman states that she had sex during the last month before the survey, but is not pregnant, not breastfeeding, not sterile, or not postmenopausal at the time of the survey. It takes the value 0 otherwise. As shown in the figure 1, for the second stage of the process, the analysis will focus on women who are at risk of pregnancy (N = 2303), because they are therefore likely to use a contraception. The second dependent variable is the “use of modern contraception” and takes the value 1 if the woman uses a modern contraception at the time of the survey, 0 otherwise. Modern methods of contraception include IUD, injection, Norplant, condoms, female condoms, pill and spermicidal.

Figure 1: Distribution of women of the sample according to whether they are at risk of pregnancy, and whether they use a modern contraception



Source: EPAP, Unité de Recherche Démographique of University of Lomé and World Health Organization, 2002

We use logit regressions to model the probabilities of these first two events (being at risk of pregnancy, and using a modern contraceptive method).

$$\text{Logit } (\pi_i = 1) = \beta_0 + \beta_1 X_i \quad (1)$$

π_i is the probability that woman i is at risk of pregnancy or the likelihood that she uses modern contraception. X is the matrix of independent variables measured at the time of the survey. Parameters β_0 et β_1 are estimated by maximizing the likelihood function. We use the "cluster" option of Stata to calculate standard errors that are robust to correlations in the regressions error term, as many women were surveyed in the same neighborhood. Independent variables considered and multivariate results are presented in the table 1.

Subsequently, the unit of analysis for the two latest stages is pregnancy (figure 2). All pregnancies that occurred during women reproductive lives are taken into account ($N = 10646$). Women who have had only one pregnancy appear once in the data. In contrast, those who have been pregnant many times contribute to several observations. Assuming that the type of pregnancy reported by women at the time of the survey reflects the reality at the time of the pregnancy, the third dependent variable "unwanted pregnancy" takes the value 1 if the pregnancy has been reported as unwanted, and 0 other wise. Finally, considering only unwanted pregnancies ($N = 3159$), the fourth dependent variable "abortion" takes the value 1 if an unwanted pregnancy is ended by an abortion, and 0 otherwise.

Figure 2: Distribution of pregnancies by contraception use before the pregnancy, by whether pregnancies were unwanted, and wether they were interrupted by an abortion

No contraception use (100 %)				
Use of modern contraception (0 %)	⇒	7487 declared as "wanted" (70.3 %)	⇒	
Use of other contraception (0 %)			89 were interrupted (1.2 %)	⇒
No contraception use 81.6 % (2578)		3159 declared as "unwanted" (29.7 %)	7398 had other outcome (98.8 %)	
Use of modern contraception 2.6 % (81)	⇒		1480 interrupted (46.9 %)	⇒
Use of other contraception 15.8 % (500)			1679 had other outcome (53.1 %)	

Source: EPAP, Unité de Recherche Démographique of University of Lomé and World Health Organization, 2002

We model the probabilities of unwanted pregnancy and of abortion, by using multilevel logit regressions with random effects. The woman, who represents the level 2 of the analysis, can have multiple pregnancies or many unwanted pregnancies (level 1). Multilevel models estimate correctly standard errors of the highest level variables effect (woman), and adjust the correlated errors for pregnancies of the same woman.

$$\text{Logit } (\pi_{ij} = 1) = (\beta_0 + \zeta_i) + \beta_1 X_{ij} + \beta_2 Z_i \quad (2)$$

π_{ij} is the probability that the woman i declares the pregnancy j as unwanted, or the probability that woman i ends the unwanted pregnancy j . X is the matrix of independent variables measured at each pregnancy, and Z variables of level 2. The intercept ζ_i takes into account random unobserved heterogeneity or the omitted features that vary from woman to woman, but which are fixed according to the pregnancies of the same woman. All results are presented as odds ratio. An odds ratio greater than 1 means that considered people are more likely to experiment the event than those of the reference category, other things being equal. A ratio between 0 and 1

indicates the opposite effect. Independent variables considered and multivariate results are presented in the table 2.

Determinants of each step leading to an induced abortion

Exposition to a pregnancy and use of modern contraception (table 1)

Models 1 contain only individual variables. The effects of these variables do not change a lot in models 2, that add to models 1, social and cultural variables. Finally, models 3 add to models 2 the interaction between age and marital status.

Table 1: Logistic regression (odds ratios) of the probability of being exposed to the risk of pregnancy and of the probability of using modern contraception at the time of the survey

Variables Modalities	P(being exposed to the risk of pregnancy)			P (using modern contraception)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Social and cultural variables						
Ethnicity						
<i>Adja-éwé (ref)</i>		<i>I</i>	<i>I</i>		<i>I</i>	<i>I</i>
Kabyè-tem		1.22*	1.21*	1.30		1.32
Other Togolese		1.27*	1.27*	1.35*		1.36*
Stranger		1.09	1.11	1.33		1.33
Religion						
<i>Catholics (ref)</i>		<i>I</i>	<i>I</i>		<i>I</i>	<i>I</i>
Traditional ^a		1.04	1.02	0.73		0.72
Protestant		1.15	1.15	0.78		0.78
Muslim		0.98	0.99	0.50**		0.50**
Other (mainly Christians)		0.78**	0.77**	0.72**		0.72**
None		0.99	1.00	0.61*		0.63*
Individual variables						
Age at the time of the survey (years)						
<i>35 - 49 (ref)</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>
30 - 34	1.11	1.10	0.95	1.29	1.30	1.31
25 - 29	1.20*	1.21*	1.03	1.67**	1.73**	1.44
20 - 24	1.31*	1.29*	0.86	3.37***	3.53***	2.74***
15 - 19	0.52***	0.51***	0.38***	4.57***	4.76***	8.56***
Marital status ^b						
<i>Married (ref)</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>
Not in relationship	0.35***	0.36***	0.16***	4.47***	4.48***	2.33*
Interaction age* marital status						
<i>35 - 49 and married (ref)</i>			<i>I</i>			<i>I</i>
30 - 34 and not in relationship			2.50***			1.38
25 - 29 and not in relationship			2.65***			2.91*
20 - 24 and not in relationship			3.92***			2.87*
15 - 19 and not in relationship			3.09***			1.07
Educational level						
<i>Not educated (ref)</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>
Primary level	1.50***	1.51***	1.53***	1.29	1.18	1.18
Secondary or more	1.75***	1.75***	1.75***	2.47***	2.15***	2.15***
Number of living children						
<i>0 (ref)</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>	<i>I</i>
1	0.45***	0.45***	0.56***	1.46**	1.52***	1.80***
2 or more	0.46***	0.46***	0.55***	3.18***	3.47***	3.98***
Mean of predicted probability	0.484	0.484	0.484	0.385	0.385	0.385
Number of women	4755	4755	4755	2303	2303	2303
Number of quarters	66	66	66	66	66	66
Log Pseudo likelihood	-3134.25	-3121.92	-3102.83	-1314.29	-1303.47	-1296.84

Source: EPAP, Unité de Recherche Démographique of University of Lomé and World Health Organization, 2002

^a Animism, Voodoo;

^b "Married" means being married or in relationship;

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Note: Because many women were surveyed in the same neighbourhood (quarter), the option "cluster" of Stata was used to obtain robust standard errors (clustered sandwich estimator).

Having an unwanted pregnancy, and abortion in case of unwanted pregnancy (table 2)

The effects of level 1 variables do not change a lot in models 2, indicating that these models generally take well into account correlation between pregnancies of the same woman. Model 3 examines, only for the last stage of the process, the effect of contraceptive use (all methods combined) on abortion. Finally, models 4 add the interaction between age and marital status.

Table 2: Multilevel logistic regression with random effect (odds ratios) of the probability that a pregnancy is unwanted, and of the probability that an unwanted pregnancy is ended by an abortion

Variables Modalities	P(pregnancy is unwanted)			P (unwanted pregnancy is ended by an abortion)			
	Model 1	Model 2	Model 4	Model 1	Model 2	Model 3	Model 4
Level 2 variables							
Ethnicity							
<i>Adja-éwé (ref)</i>		<i>1</i>	<i>1</i>		<i>1</i>	<i>1</i>	<i>1</i>
Kabyè-tem		0.92	0.92		1.71**	1.69**	1.69**
Other Togolese		0.92	0.92		1.25	1.25	1.25
Stranger		0.97	0.97		0.99	0.99	0.99
Religion							
<i>Catholics (ref)</i>		<i>1</i>	<i>1</i>		<i>1</i>	<i>1</i>	<i>1</i>
Traditional ^a		0.68*	0.68*		0.37***	0.37***	0.38**
Protestant		0.91	0.91		1.27	1.26	1.26
Muslim		0.27***	0.27***		0.46*	0.46*	0.45*
Other (mainly Christians)		1.35*	1.35*		0.84	0.85	0.85
None		0.67*	0.68*		0.69	0.71	0.72
Generation							
<i>G 1952-1967 (35-49 years old) (ref)</i>		<i>1</i>	<i>1</i>		<i>1</i>	<i>1</i>	<i>1</i>
G 1967-1977 (25-34 years old)		2.00***	2.00***		1.74***	1.70***	1.70***
G 1977-1987 (15-24 years old)		4.11***	4.12***		2.35***	2.26***	2.27***
Level 1 variables							
Age at the time of pregnancy (years)							
<i>30 - 49 (ref)</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
25 - 29	0.93	0.85	0.80*	1.10	1.00	1.03	0.93
20 - 24	1.99***	1.67***	1.60***	1.10	0.91	0.94	0.91
11 - 19	5.32***	4.32***	4.42***	0.69	0.56*	0.58*	0.58
Marital status ^b							
<i>Married (ref)</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Not in relationship	18.54***	16.67***	7.62***	12.54***	12.12***	11.98***	5.12*
Interaction age* marital status							
<i>30 - 49 and married (ref)</i>			<i>1</i>				<i>1</i>
25 - 29 and not in relationship			2.79*				3.13
20 - 24 and not in relationship			2.39*				2.38
11 - 19 and not in relationship			2.02				2.36
Educational level							
<i>Not educated (ref)</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
Primary level	1.75***	1.29*	1.29*	1.96***	1.53*	1.52*	1.52*
Secondary or more	2.04***	1.64***	1.64***	3.33***	2.58***	2.48***	2.48***
Number of living children							
<i>0 (ref)</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
1	0.95	1.00	1.03	5.88***	6.30***	6.31***	6.57***
2 or more	2.00***	2.21***	2.27***	10.73***	12.78***	12.71***	13.36***
Number of previous abortion							
<i>0 (ref)</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>
1	1.27*	1.14	1.14	1.77***	1.67**	1.65**	1.65**
2 or more	0.89	0.78	0.78	0.98	0.89	0.89	0.89
Use of contraception							
<i>No method (ref)</i>						<i>1</i>	<i>1</i>
All method						1.53**	1.52**
Mean of predicted probability	0.257	0.255	0.255	0.467	0.464	0.463	0.464
Standard error of intercept	1.60	1.56	1.56	1.39	1.38	1.37	1.37
Intra-class correlation	0.44***	0.42***	0.42***	0.37***	0.37***	0.36***	0.36***
Number of pregnancies	10646	10646	10646	3159	3159	3159	3159
Number of women	3230	3230	3230	1877	1877	1877	1877
Log Pseudo likelihood	-4815.58	-4721.15	-4717.98	-1852.56	-1824.13	-1819.79	-1818.51

Source: EPAP, Unité de Recherche Démographique of University of Lomé and World Health Organization, 2002

^a Animism, Voodoo;

^b "Married" means being married or in union;

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Conclusion and discussion

Induced abortion remains a taboo topic in Togo and the understanding of the phenomenon is still incomplete. Using data from the Survey on Family Planning and Induced Abortion in Lomé (EPAP), conducted in 2002 among 4755 women aged 15-49, we approached the abortion decision-making as a process that begins with exposure to the risk of pregnancy, goes through a lack of contraceptive use and a declaration of a pregnancy as “unwanted” by the woman, and ends with abortion. This paper tried to point out, not only demographic and socio-economic determinants of the abortion decision-making in Lomé, but also how these determinants affect the three stages prior this decision.

Descriptive results show that 48.5% of respondent women reported having had sexual intercourse during the last month preceding the survey, whereas they were not pregnant, not breastfeeding, not sterile nor postmenopausal. Among women who were therefore at risk of pregnancy at the time of the survey, 38.5% used a modern method of contraception. Almost 30% of all pregnancies recorded among respondents were declared as “unwanted” and about half of them (47%) were interrupted by induced abortion. Finally, the majority (82%) of unwanted pregnancies, 78% of pregnancies ended with abortion, were contracted in the absence of contraception use, particularly the modern one. The abortion process would thus happen, mainly through a low use of contraception and through the occurrence of pregnancies reported as unwanted. However, previous data on the analysis of the Reproductive Health situation (AS / SR) in Togo in 2003 showed that contraception was often available in health facilities in Lomé (Urd, 2004). Moreover, women generally have a good knowledge of contraceptive methods, particularly of modern methods. Except women who did not use contraception at the time of survey (EPAP) because they want to get pregnant, many respondents at risk of pregnancy stated do not use contraception because of their partner opposition or their own opposition to contraception, because of fear of side effects, because of lack of information or because of religion’s opposition. These results confirm those of a recent study on several countries in Sub-Saharan Africa which reveal that fear of side effects or health consequences of contraception often justified the non-use of contraception among women, apart from the fact that they did not believe to be at risk of becoming pregnant (Sedgh *et al.*, 2007). It is thus necessary to strengthen women and couple’s knowledge of contraceptive methods and of their real potential side effects, to improve access to contraception and prevent unwanted pregnancies and unsafe abortions.

Even if some previously wanted pregnancies are ended for health problems (for the woman or the fetus), and when other people are involved in the decision-making (Elul, 2004), according to our data, 94% of pregnancies ended in abortion were reported by respondents themselves as “unwanted”. Only 1.2% of pregnancies reported as unwanted had been ended. Moreover, the fact that pregnancy has been declared as “wanted” or “unwanted” at the time of the survey is a limit, because many women may be reticent to declare as unwanted a pregnancy which resulted in a live birth. According to our data, approximately 18.6% of pregnancies that were resulted in live births were considered as “unwanted”. Probably these pregnancies carried to term were

wanted, but “unplanned” rather than “unwanted”. The term “unwanted” seems then to measure at the same time really unwanted pregnancies, unplanned pregnancies and pregnancies that were wanted but could be socially stigmatized. There is a need to distinguish these terms with precision, and to better adapt them to contexts that are under a strong social pressure or a low contraceptive prevalence. Less social stigma of pregnancies resulting from “disapproved relationships” could therefore help women to have a different opinion of their pregnancy.

According to multivariate analysis, ethnicity and generation influence only certain stages of the abortion process, while women’s religion, marital status, educational level and parity have significant effects on the four stages. Thus, the expected high risk of abortion among educated women results from their high risk at all stages of the process. Even if they are less exposed to the risk of pregnancy, women who have at least two children are more likely than those who have no child, to use modern contraception, to declare a pregnancy as unwanted, and to end it through abortion. Even if several unwanted pregnancies occur at younger ages, it is mainly the “out of wedlock” character of the pregnancy that leads it to be considered as unwanted and to be ended. In addition, women who had a previous abortion or used contraception are more likely to resort to abortion.

In the light of these results, an effective programmatic intervention among groups at risk of having an abortion must take into account their risk at earlier stages of the process leading to the abortion, i.e., exposure to risk of pregnancy, use or not of modern contraception according to whether they would have a birth plan, and finally how they consider their pregnancy.

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