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Research Article

Study in Cameroon Schools of Family Determinants of Early Pregnancies

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ABSTRACT

Introduction: According to the World Health Organization (WHO), adolescence is the period of growth between 10 and 19 years of age. Complications from pregnancy are the second leading cause of death for adolescent girls aged 15 to 19 worldwide.

Objective: In order to reduce the phenomenon of early pregnancy, we set out to study the family determinants of early sexuality and its corollary of pregnancy among adolescent girls in secondary schools in the Douala 3rd district in Cameroon.

Methodology: We conducted an analytical case-control study from November 08, 2018, to June 26 (7months) 2019 in ten secondary establishments in the Douala 3rd district. Included in the study were all adolescent girls, students in one of the secondary schools in the said district who agreed to participate in the study. Data analysis was done using SPSS 20.0 software. The significance threshold was set at $p<0.05$.

Results: A total of 445 adolescent girls were selected, including 89 cases and 356 controls. In the uni-variate analysis, the family factors associated with the occurrence of teenage pregnancies were: living outside the house and parental guidance (aOR= 1.68; CI=1.03-2.76), having a tutor living with a partner (aOR=2.14; CI=1.10-4.18) and single (aOR=2.89; CI=1.70-4.93), the tuition fees covered by someone other than parents (aOR = 1.73; CI=1.01-2.96), having a mother, sister or both having conceived during adolescence (OR=1.64; CI=1.01 -2.65, aOR=2.01; CI=1.20-3.37, aOR=2.29; IC=1.17-4.49).

Conclusion: The adolescent girl who is not guided or assisted by her parents is highly exposed to early sexuality and its corollary of early pregnancy.

Keywords: Early pregnancies; Famine; School fees; Tutor

INTRODUCTION

Adolescence is the period of growth and development that takes place between childhood and adulthood, that is to say, 10 and 19 years. It is a period of critical transition in life and is characterized by a significant rate of growth and transformation. It is a phase of preparation for adulthood during which key stages of development take place [1].

Worldwide, around 16 million adolescent girls aged 15 to 19 and one million adolescent girls under the age of 15 give birth each year; which represents nearly 11% of global births. 95% of these births take place in developing countries [2]. Almost half of the countries in sub-Saharan Africa for which information is available are classified as "red", meaning that they have adolescent fertility rates above 100 births per 1,000 adolescent girls. These countries are those of West Africa, Central Africa, East Africa and Southern Africa. The proportions recorded by Niger, the Democratic Republic of Congo and Mali are among others high, with 192, 168 and 167 births per 1000 adolescent girls, respectively [3]. Teenage pregnancies have been the subject of numerous studies around the world. According to a study conducted by Dryfoos in 1996 in the United States, early pregnancies are frequent in societies characterized by poverty, low education level and families headed by a mother who gave birth to their first child at adolescence [4]. Teenage pregnancy is also associated with other problem behaviours, such as alcohol and drug use and early initiation of sexual activity, which have been identified as predictors of pregnancy [5]. A study done in various European countries by Imamura et al. made it possible to group these factors into 5 groups: socio-demographic factors, family structure and stability, data related to education, risky health

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behaviours, knowledge, accessibility and acceptability of family planning [6]. According to the United Nations Population Fund (UNPF), in Cameroon, fertility remains early. The adolescent fertility rate represented 12% of general fertility in 2015, while in 2018; this rate was 16.31% [7,8].

Early pregnancies can have consequences on the health of adolescent girls (toxemia, anemia, nephropathy, cephalo-pelvic disproportion, haemorrhage, tears, obstetric fistulas, depressive disorders and maternal mortality) as well as that of the fetus they carry (low birth weight, fetal distress, and neonatal asphyxia, prematurity and fetal mortality) [9]. It is noted that the younger the mother, the greater the health risk for the child. This can be explained by the fact that these girls are more vulnerable than adult women to the risks of complications linked to pregnancy and birth, because not only their gynaecological state is not ready and also their pelvic growth is not finished either [10]. These pregnancy-related complications are the second leading cause of death for girls aged 15 to 19 worldwide. It is also noted that three million unsafe abortions take place among girls aged 15 to 19 each year, which increases maternal mortality and causes lasting health problems. In Africa and Asia, around 13% of maternal deaths are linked to unsafe abortions [9,11]. Pregnancy in adolescent girls can also have economic and social consequences. Many young girls have to drop out of school when they become pregnant. However, a girl with little or no education will have fewer skills and fewer chances of finding a job [2].

Given the high prevalence of teenage pregnancies, the seriousness of complications and the maternal and fetal life threat at stake worldwide, in Africa, particularly in Cameroon; given the scarcity of studies on this subject in the city of Douala, we wondered about the family determinants exposing teenage pregnancies in secondary schools in the Douala 3rd district.

METHODOLOGY

Type of study

It was a case-control analytical study.

Study location

We carried out our study in the city of Douala, specifically in secondary schools in the district of Douala 3rd district. Ten schools were chosen randomly including 4 private secondary schools and 6 public secondary schools:

- Oyack High School
- Bobongo Petit-Paris bilingual high school
- Ngodi-Bakoko Bilingual High School
- Nylon Brazzaville Bilingual High School
- Nylon Technical School Douala
- Ndogpassi High School
- Perfection Bilingual College
- lPerle Bilingual college
- Piedjou Multilingual Multipurpose Institute
- Pozam College

Period and duration of the study

We conducted our study from November 08, 2018, to June 26, 2019, duration of seven months.

Target population

Our target population consisted of school adolescents from Douala 3rd district.

Source population

Our source population consisted of all the pupils of the secondary schools of Douala 3rd selected in our study.

Inclusion criteria

General inclusion criteria: Was included any pupil from one of the secondary schools of Douala 3rd having an age between 10 and 19 years old and agree to participate in the study with the informed consent of a parent.

Cases and controls

Was considered as a case that declared having conceived at least once while the control was exempt.

Exclusion criteria

Excluded from the study were those whose survey sheets were incomplete or poorly completed.

Sample size

The sampling method was continuous and exhaustive. The minimum sample size was calculated according to the Schlesselman formula below [12]:

$$n = \left(\frac{r+1}{r}\right)\frac{\bar{p}\left(1-\bar{p}\right)\left(z\beta+\frac{z\alpha}{2}\right)^2}{\left(p_1-p_2\right)^2}$$

n: Minimum size per group

r: Case-control ratio (r=1/4) 22

p: Variability measure (similar to standard deviation)

$Z\frac{\alpha}{2}$: Standardized level of significance=1.96

Z=Standardized power=0.84

p_1: Prevalence of adolescent girls having started their reproductive life, i.e. 25% according to the 2011 EDS-MICS report in Cameroon [13].

p_2: prevalence of adolescent girls who have already had sexual intercourse, i.e. 81% according to the 2011 EDS-MICS report in Cameroon [13].

After numerical application of this formula, the case group was made up of at least 83 cases for 332 controls with a total number of 415 participants.

Data was collected using a structured questionnaire, explained and distributed to girls in their respective classes during recess in the absence of boys.

The variables of interest for this study were:

- The type of family of origin of the adolescent
- Person with whom she lived
- The concept of pregnancy in mother or sister in adolescence
- The position of the adolescent girl among the siblings
- Data linked to the economic level (employment of parents)

Data analysis

Data were entered using the CSPro 7.0 software and the analysis was carried out using SPSS version 20.0 software. The data comparison was carried out using the Chi-Square test, the odds ratio and the 95% confidence interval estimate to see if there were any associations. A p-value of less than 0.05 was considered to be statistically significant.

RESULTS

At the end of our study, 2,448 girls were interviewed. In total, we had 161 cases of pregnancies declared and 2287 girls who had never conceived a frequency of 6.57%. In the end, 445 adolescent girls met the inclusion criteria, including 89 cases and 356 controls (Figure 1).

Most of the adolescent girls came from nuclear families (77.2%); however, the family type was not found to be a factor associated with the occurrence of teenage pregnancies (Table 1).

Similarly, the position of the adolescent in her siblings was not found to be a factor associated with the onset of early pregnancy (Table 2).

On the other hand, living with grandparents was found as a predictive factor (OR=2.40; CI=1.09-5.30) and this significantly (p=0.027), unlike living with both parents, which was found as a protective factor (OR=0.70; CI=0.54-0.91) from early pregnancies (Table 3).

In our study population, having a widowed person or a person living with a partner as the head of the family was associated with the occurrence of teenage pregnancy with a risk of OR=2.33 respectively; CI=1.26-4.32 and OR=2.06; CI=1.22-3.46. On the other hand, having a married tutor was found to be a protective factor (OR=0.65; CI=0.52-0.81) (Table 4).

The tuition fees paid for by a third party (brother or sister) other than the parents was strongly predictive of adolescent pregnancy (OR=4.00; CI=1.44-11.11) this significantly (p=0.004). On the other hand, parental involvement in this financial management was a protective factor (OR=0.86; CI=0.74 - 0.99) (Table 5).

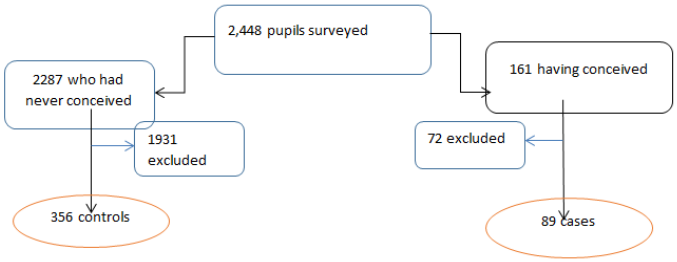

Figure 1: Distribution of the study population.

Table 1: Distribution of the study population according to the type of family from which the adolescent comes.

Type of family	Cases N=89 n (%)	Cases N=356 n (%)	OR (CI 95%)	p
Nuclear	50 (56,1)	225 (63,2)	0,89 (0,73 – 1,09)	0,222
Monoparental	18 (20,2)	54 (15,2)	1,33 (0,82-2,15)	0,246
Polygamy	7 (7,9)	28 (7,9)	1,00 (0,45-2,21)	1,000
Recomposed	6 (6,7)	25 (7,0)	0,96 (0,41-2,27)	0,925
Separated	8 (9,0)	24 (6,7)	1,33 (0,62-2,87)	0,463

Table 2: Distribution of the study population according to the position among the siblings.

Position among siblings	Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
Elder	32 (36,0)	106 (29,8)	1,208 (0,877-1,663)	0,259
Benjamin	16 (18,0)	72 (20,2)	0,889 (0,545-1,450)	0,634
Single girl	11 (12,4)	38 (42,7)	1,158 (0,617-2,173)	0,649
	7 (7,9)	12 (13,5)	2,333 (0,946-5,755)	0,060
Unique daughter				
Any	23 (25,8)	128 (36,0)	0,719 (0,492-1,049)	0,071

Table 3: Distribution of the study population according to the person with whom they live.

Person with whom they live		Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
Father and mother	Yes	38 (42,7)	216 (60,7)	0,70 (0,54-0,91)	0,002
	No	51 (57,3)	140 (39,3)	1,46 (1,17-1,82)	
Father	Yes	17 (19,1)	50 (14,0)	1,36 (0,83-2,24)	0,232
	No	72 (80,9)	306 (86,0)	0,94 (0,84-1,05)	
Mother	Yes	7 (7,9)	17 (4,8)	1,64 (0,70-3,85)	0,248
	No	82 (92,1)	339 (95,2)	0,97 (0,91-1,03)	
Grandparents	Yes	9 (10,1)	15 (4,2)	2,40 (1,09-5,30)	0,027
	No	80 (89,9)	341 (95,8)	0,94 (0,87-1,01)	
Brother /sister	Yes	5 (5,6)	21 (5,9)	0,95 (0,37-2,46)	0,919
	No	84 (94,4)	335 (94,1)	1,00 (0,95-1,06)	
Husband	Yes	0 (0,0)	0 (0,0)	~	~
	No	89 (100,0)	356 (100,0)	~	
Alone	Yes	1 (1,1)	0 (0,0)	~	0,453
	No	88 (98,9)	356 (100,0)		

The starvation at school was highly exposing to external solicitations and found as a factor associated with the occurrence of teenage pregnancies (OR=3.11; CI=1.19-8.13) and this in a way significant (p=0.015) (Table 6).

Having a mother who conceived in adolescence was found significantly as a predictor of early pregnancy (OR=1.40; CI=1.08-1.82; p=0.001) m (Table 7) as much if a sister had conceived during adolescence (OR=1.68; CI=1.17-2.42) (p=0.007) (Table 8).

In our study, this cumulative history in the sister and the mother

Table 4: Distribution according to the marital status of the head of the family.

Marital status		Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
Single	Yes	8 (9,0)	20 (22,5)	1,60 (0,73-3,51)	0,241
	No	81 (91,0)	336 (77,5)	0,96 (0,90-1,03)	
Living with partner	Yes	18 (20,2)	35 (9,8)	2,06 (1,22-3,46)	0,006
	No	71 (79,8)	321 (90,2)	0,88 (0,79-0,99)	
Married	Yes	43 (48,3)	265 (74,4)	0,65 (0,52-0,81)	0,000
	No	46 (51,7)	91 (25,6)	2,02 (1,55-2,64)	
Divorced	Yes	6 (6,7)	12 (3,4)	2,00 (0,77-5,18)	0,148
	No	83 (93,3)	344 (96,6)	0,96 (0,91-1,02)	
Widow	Yes	14 (3,9)	24 (6,7)	2,33 (1,26-4,32)	0,006
	No	75 (96,1)	332 (93,3)	0,90 (0,82-0,99)	

Table 5: Distribution according to the person who bears the costs of the adolescent's schooling.

		Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
Parents	Yes	62 (69,7)	288 (80,9)	0,86 (0,74-0,99)	0,020
	No	27 (30,3)	68 (19,1)	1,59 (1,09-2,32)	
Brother/ sister	Yes	7 (7,9)	7 (2,0)	4,00 (1,44-11,11)	0,004
	No	82 (92,1)	349 (98,0)	0,94 (0,88-1,00)	
Tutor	Yes	7 (7,9)	40 (11,2)	0,70 (0,32-1,51)	0,354
	No	82 (92,1)	316 (88,8)	1,04 (0,97-1,11)	
Totally the adolescent	Yes	1 (1,1)	0 (0,0)	~	0,453
	No	88 (98,9)	356 (100,0)		
Partially the adolescent	Yes	8 (9,0)	15 (4,2)	2,13 (0,93-4,88)	0,068
	No	81 (91,0)	341 (95,8)	0,95 (0,89-1,02)	

Table 6: Distribution according to whether or not to benefit from what to eat at school.

		Cases n (%)	Controls n (%)	OR (CI 95%)	p
Pocket allowance	Yes	82 (19,1)	347 (80,9)	0,94 (0,89-1,01)	0,015
	No	7 (43,8)	9 (56,3)	3,11 (1,19-8,12)	

Table 7: Distribution according to the mother who conceived before 20 years.

	Cases n (%)		Controls n (%)	OR (CI 95%)	p
Mother who conceived before 20 years	Yes	42 (47,2)	120 (33,7)	1,40 (1,08-1,82)	0,001
	No	47 (52,8)	236 (66,3)	0,80 (0,65-0,98)	

multiplied the risk of early pregnancy by 2.07 (OR=2.07; CI=1.16-3.69) (Table 9).

Table 8: Distribution by function of a sister who conceived in adolescence.

Sister who conceived in adolescence		Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
	Yes	29 (32,6)	69 (19,4)	1,68 (1,17-2,42)	0,007
	No	60 (67,4)	287 (80,6)	0,84 (0,72-0,97)	

Table 9: Distribution by the function of a sister and mother who conceived during adolescence.

Sister and mother who conceived during adolescence		Cases N=89 n (%)	Controls N=356 n (%)	OR (CI 95%)	p
	Yes	15 (16,9)	29 (8,1)	2,07 (1,16-3,69)	0,013
	No	74 (83,1)	327 (91,9)	0,91 (0,82-0,99)	

LIMITS OF OUR STUDY

The delicacy of the subject under study associated with the strongly juvenile aspect of our population constituted obstacles to the declaration of pregnancy and therefore generate statistical biases.

DISCUSSION

Adolescence is in essence a period of self-structuring framed by parental referral.

Moving outside parents (aOR=1.68; CI=1.03-2.76; p=0.040), was found as a predictor of early pregnancy in our study population, thus corroborating the findings of other authors, including Mathewos and Mekuria in southern Ethiopia where adolescent girls who do not live with their two parents were 3.1 times more risk of early pregnancy [14], Faler et al. in their study in Brazil [15], Berrewearts and Noirhomme [16] in their study in Belgium, as well as Wado et al. [17] in their study conducted in five countries in East Africa claim that the absence of both parents during a certain period of adolescence increases the risk of pregnancy in young girls [15-17]. Indeed, the absence of the parents creates in the adolescent a communication deficit and an absence of education in sexuality which gives free rein to risky behaviours as well as to early pregnancies.

However, parental presence is not always a guarantee of secured sexuality; Beguy et al. in their study in Kenya who report a risk of early pregnancy among adolescent girls living with their two parents [18]. This finding suggests that sex education is complex and cannot be limited to the mere presence of both parents.

In our study, having a single tutor (aOR=2.89; CI=1.70-4.93; p=0.000) or living with a partner (aOR=2.14; CI=1.10-4.18; p=0.026) was a predictor of adolescent pregnancy. This can be explained by the fact that adolescence is in essence the delicate period of personality structuring, any adult behaviour as deviant as it may be, serves as a model for these adolescent girls.

Adolescent girls whose tuition was not paid for by their parents were at higher risk of early pregnancy (aOR=1.73; CI=1.01-2.97). Our results can be superimposed on those of Sakinatou which showed that adolescent girls who pay their school fees and those who partially participate in them are 7 and 6 times more exposed to early pregnancies [19]. Our results also agree with those of the UNPF in Senegal where the inability of parents to pay school

fees for adolescent girls, exposed them to prostitution [3]. Sexual compensation here being the logical continuation in our opinion of this financial assistance by a third party not a member of the family.

In our study, having a mother (aOR=1.64; CI=1.01-2.65), a sister (aOR=2.01; IC=1.20-3.37) or both (aOR=2.29; CI=1.17-4.48) having conceived in adolescence were factors associated with adolescent pregnancy. Our results can be superimposed on those of Ayele et al. in northern Ethiopia, where having a maternal history of early pregnancy was associated with the occurrence of early pregnancy in girls (aOR=4.14; CI=1.84-9.33) [20]. Faler et al. stated that having brothers or sisters who had children during adolescence was associated with the occurrence of early pregnancies (OR=1.56; CI=1.19-2.06) [15]. Our findings also agree with those of Sakinatou in Ngaoundéré who showed a strong correlation between having a sister (aOR=5.76; IC=3.62-9.17), a mother (aOR=3.43; IC=2.19-5.37) or both (aOR=7.64; CI=4.48-13.01) having conceived in adolescence and the occurrence of pregnancies in adolescence [19]. This could be explained by the fact that adolescent girls even unconsciously tend to reproduce the family models around them and shows the influence that older women can have on their younger sisters.

CONCLUSION

The adolescent not supervised and assisted by her parents is highly exposed to early sexuality and its corollary of early pregnancy.

The risk is also increased if a similar history was found in the mother and an older sister.

CONTRIBUTION OF OUR STUDY TO SCIENCE

Our study highlights the multidimensionality of responsible kinship; the latter should not be limited to spacing births, nor to an exclusively physical presence without material or moral assistance to spur the structuring of adolescence which in essence is a period of great psychological fragility.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

CONTRIBUTION OF AUTHORS

Essome designed the study, collected the data Co-led the study and wrote the manuscript, Tocki provided literature review and manuscript editing, Epossè, Boten, Penda, Kedy and Halle read and corrected the manuscript, Foumane directed the study and supervised the writing of the manuscript.

All authors have read and validated the final version of the manuscript.

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