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Changes in Adolescent Fertility in Benin from 2006 to 2017

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Abstract

Index terms—

1 INTRODUCTION

The adolescent reproductive health is part of the main priorities among the 17 Sustainable Development Goals (SDGs) to be achieved by 2030. That's why, all countries are committed to monitor key indicators related to this matter. Benin's current female population is 6,365,510 what means 50.7% of the total population. Among them, 2,347,091 women are aged 15-24 years. This large figures of women or young girls in the Beninese population whose sexual behavior influences the demography is an indicative vector of the exponential fertility rate. Being pregnant before the maturity of the body can compromise health, scholarship, even community improvement. This article uses data from the Demographic and Health Surveys (DHS) conducted in Benin in 2006, 2011 and 2017 respectively. Early pregnancies have a downward trend from 2007 to 2011: 16.8% to 13.3%.

However, the phenomenon is reversed between 2011 and 2017. An increase of almost two percentage points from 13.3% to 15.2%. Seeking the explanation of this phenomenon trend request to understand adolescent sexual behavior. The literature review on this matter shows that the previous works related to adolescent sexual behavior cover theories and field works as well.

2 Literature review 1.Socio-cultural approach

Female adolescent fertility remains an issue of predilection because it arouses particular interest. it used to be linked with to culture. This approach stipulates that the sexual behaviors of individuals are influenced by their morals, living environment, socio-cultural norms of life and the demands of gender that influence the functioning London Journal of Medical and Health Research of the society in which they live. In other words, sexuality is a social construct. Framed by a set of laws, customs, rules and norms that vary in time and space (Lhomond, 2009). Thus, the sexual practices of individuals are based on the socio-cultural system in which they are embedded. Ways of thinking and acting inherited from traditions and customs (ethnicities or regions of residence and religions) **??**Emina, 2005).

Traditional values may therefore influence the sexual behavior of individuals. In Uganda, for example, the customs of some societies encourage intense sexual activity before or during marriage.

Similarly, studies on the influence of traditional values on sexual behavior suggest variation by ethnicity and religion. (Rwenge et al 2004). This approach avoids individual characteristics that can influence sexual behaviors.

3 Cultural group approach

This model of thinking shows that ethnicity influences sexual behavior. Ethnicity is recognized by several actors as an important factor in differentiating the sexual behavior of individuals, such as the age at the first intercourse, the age at first union, the use of contraception methods, the age at first pregnancy, etc. For example, studies conducted in Côte d'Ivoire by **??**alnan et al (2004) indicate that certain ethnic groups (Krou and Sènoufo or Malinké) increase their chances (2.13 and 1.66 respectively) of having sexual relations before the age of 16 compared to girls from the Akan group. Furthermore, pregnancy and virginity are requested by some social group before marriage.

4 Biological approach 1.1.3.1 Premarital virginity

The first factor that can explain the fertility of adolescents in Benin is the age of sexual debut. Several studies have attempted to demonstrate that the age of first sexual contact (i.e., early sexuality) increases the fertility

rate among adolescents. The adolescents, because of their early sexual debut, are also more exposed to early motherhood because they have a longer exposure period (EDSB-V 2017-2018).

In reality, culture has two different influences on sexual behavior. Some cultures tolerate or encourage premarital or even post-marital sex (as among the Beti in Center Cameroon). Young girls in this region induce menarche in order to hasten the onset of sexual relations (Rwenge 2002(Rwenge , 2004)). Parents have no control over their children's sexuality and do not even place much importance on a girl's virginity before marriage.

On the other hand, some cultures advocate virginity and prefer unmarried girls to be virgins. In these cases, virginity has social significance (Thiriat 2000; **??**a'ad, 2007).

5 Premarital pregnancy

In some cultural groups, young girls are encouraged to have premarital sex to prove their fertility through pregnancy before being given in marriage by their families (Rossier et al, 2013). Thiriat (2000) confirms this theory by stating, "premarital pregnancy is valued as a guarantee of the young woman's fertility. The child will belong to the husband whether or not he is the genitor". These adolescents engage in premarital sex in order to achieve fertility, the goal of which is marriage.

It is true that the use of contraceptive methods reduces the risk of early fertility among adolescents, but in Africa, certain traditional theories undermine these modern advances. This is the subject of Nalwadda et al (2010) study on "Persistent high fertility in Uganda: Young people recount obstacles and enabling factors to use of contraceptives. The sampling method was used, as well as a survey was conducted at the local level for new perspectives. This work demonstrated that: "Various obstacles that impede contraceptive use were identified and classified into five categories that included misconceptions and fears, gender power relations, sociocultural expectations and contradictions" (Nalwadda et al, 2010).

6 Religious approach

Religion conveys a number of values and norms that govern the lives of the faithful at the behavioral, psychological and physiological levels. It therefore plays a fundamental role in the London Journal of Medical and Health Research perceptions, behaviors and attitudes of the faithful through their beliefs. In most religions, the question of sexuality is a private matter and is a taboo subject, and the true information is not relayed within it. Islam and Christianity are hostile to premarital sex and adultery.

In a study carried out in Congo, Enel and Querre (2006) stated that all churches prohibit premarital and extramarital sex and induced abortion; all advocate fidelity and abstinence; none supports the use of condoms. Yet these precepts are not scrupulously respected by believers. The use of condoms is equated with depravity of morals. Nevertheless, the influence of religion varies from one region to another. For example, in urban Côte d'Ivoire, young Muslim women are less likely to have used condoms in their lives than their Christian counterparts **??**Talnan et al., 2004). The same finding are provided by **??**embele (2004). Even in urban settings in Latin America, it is found that there is a difference between the morals of evangelical Christians who exercise community control over the conduct of young women, forcing them to delay their entry into sexual activity (Meslé et al, 2011). The influence of religion on the sexual initiation of young people has been analyzed by **??**ozon et al (2006) who found that sexual initiation is postponed among girls who have experienced a "coherent" religious socialization: Catholic and Pentecostal. Some adolescents start earlier sexual activities for economic reasons.

7 Economic approach

This approach demonstrates that the sexual behaviors of adolescents and youth are determined by economic and social motivations (Moloua et al;2004).

8 Safety approach

Rational coping theory demonstrates that youth engage in intimate relationships to obtain money, gifts, or other gratifications to support themselves (Rwenge 2000;2002). The search for economic support is then the guiding vector for premarital or even premature sexual activity.

9 Social promotion approach

Apart from improving their living conditions, some adolescent girls give themselves to sex to ensure their passage to the next grade or to graduate from school. This theory was highlighted by Revenge (2004), who found that girls recruited some of their sexual partners from among intellectually able colleagues or teachers (Mbalmayo Region, Cameroon).

10 Institutional approach

It is based on the assumption that young people's safe behavior depends on both the policy and legal framework and the availability of legal access to information. The institutional environment for sexual activity can affect young people's sexual behavior. (Anon et al 2005; Kalanbaye, 2007). It is an approach that inflicts responsibility on laws, programs, and health services for young adolescents exposed to early sexuality (Mayack, 2014). Young

adolescents, especially in rural areas, do not use contraceptive methods. This situation can be explained by a lack of accessibility or a lack of information on contraceptive methods among women who are less educated than those living in urban areas (DHSB 2017-2018).

11 Gender approach

This approach states that women or girls or adolescents, because of their low decision-making power, have no or limited control over their sexuality (Moloua et al., 2004). It assumes that narrowing the gap between male and female power will enable women to participate more effectively in decision-making in all areas, including sexuality and health (Kobelembi, 2005). Even after their early entry into fertility, adolescents are very limited in their sexual decision-making.

In Sub-Saharan Africa, gender relations are recurrent. Men dominate women in matters of sexuality. In most traditional African societies (patriarchal and patrilineal), women are considered as "social cadets" and are marginalized. In terms of marriage, the man has the last word to make the decision. For example, London Journal of Medical and Health Research when it comes to sexual activity, the young married teenage girl is not allowed to refuse her spouse sex when he wants her to **??**Revenge, 2012).

She then remains very ignorant and silent by remaining passive in her relationships and her power to protect herself sexually **??**Gupta, 2003).

12 Global approach

This approach was reaffirmed by Gueye et al (2001). They state: "Increasing modernization and media exposure, along with delineation in the authority of parents and elders, have undermined the societal and cultural rules that formerly controlled and informed adolescent sexuality.

Thus, the traditional social structures are weakened and oriented in the satisfaction of their personal desires than in the family responsibilities. With globalization, modernization, increasing urbanization, and exposure of the population to the media, there is a collapse or decline in traditional sex education (De Launay and Guillaume, 2007).

Widespread schooling in Africa and economic crises give rise to social behaviors that are not adapted to community life, but also encourage delayed sexuality. In fact, the extension of schooling for young girls prolongs celibacy and the entry into union or sexual activity (Mondain, 2006).

13 Social perception approach

Young people believe that they are hindering their fertility by using contraceptives, and women believe that by taking pills they run the risk of fibroids, cancers and other destroyed genitalia. The use of condoms by men is considered destructive to women's uterus. All these factors slow down the use of contraceptives and wrongly increase the fertility rate.

Child marriages as well as the phenomena of female circumcision are also factors that influence adolescent fertility in Benin (UNFPA, 2016). Countries with the highest fertility rates in the world are also those with the highest child marriage rates. Child marriage is a real problem because it not only spoils the future of children (young girls), but also destroys any chance of controlling their fertility (UNFPA, 2016).

The traditional conception of sex, which is considered taboo, is also a factor in the high fertility rate in Benin. The lack of communication between parents and children leads the latter to adopt behaviors that are not recommended during their adolescence.

14 School curriculum approach

UNFPA (2014), during Analysis of Policies and Programs Opportunities and Challenges on sexual and reproductive health and rights of adolescent girls in Benin observed that: "Sexuality education at the secondary level is necessary, especially if it starts at the beginning of the school curriculum (young people from 12-13 years of age or especially from puberty and before the first sexual relations). The improvement of the content of the courses and the training of the teachers and instructors of family life education is necessary.

Beyond the technical biomedical aspects, it is essential to be able to address questions of sexual and reproductive rights of young people, relations between boys and girls, gender inequalities and stereotypes that shape the power relationships in the negotiation (acceptance or refusal) of sexual relations and love". It is then up to the teachers to show ethics and good use of the knowledge acquired beyond their roles as trainers and educators.

15 Objectives

The overall objective of this study is to analyze the factors that explain adolescent fertility in Benin.

Specifically, the study aims to: *Characterize the profile of adolescent already proved their fertility *Analyze socio-cultural and economic factors that influence adolescent motherhood

16 Hypothesis

17 H1:

We assume that adolescent fertility in Benin is related to social inequalities in living standards.

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That is, adolescent girls from lower living standards contribute more to the increase in fertility in all three periods. H2: We assume that adolescents with low levels of education contribute more to the increase in early fertility than those with high levels of education in all three periods.

19 H3:

We hypothesize that adolescents who enter sex early contribute more to the increase in early fertility than those who enter sex late.

20 Limitations of the study

The phenomenon could be better understood if we had at our disposal data that took into account adolescents under 15 years of age, since many adolescents in Benin become pregnant before the age of 15.

21 II. METHODOLOGY

The study population is girls aged 15-19 years. Sociodemographic data on the girls' households and on their fertility were collected through a household questionnaire. The quality of the data was assessed through the non-response rate. Only variables with more than 98% response rate were included in this study. The dependent variable is "fertility status characterized by any pregnancy of girls aged 15-19 years that resulted in a live birth in 20007, 2011 and 2017 in Benin". 14 independent variables were mobilized among which some were recoded and others were constructed from those already existing in the database. The independent variables are presented in the table in annex. The analysis files were constructed with SPSS 25 under Windows.

Stata 15 was used for the logistic regression. Two methods of analysis were used. Descriptive analysis was used to verify the association or not between the dependent variable and each of the independent variables (significance level) with a margin of error of 5% and to profile the adolescents according to their fertility status. To determine the sources of change, the simple and advanced decomposition used adolescents' education and living standards as classification variables. The simple decomposition identified the immediate sources of social change by estimating the relative contribution of two or more components to that change. These are either the performance effect (changes in group performance) or the composition effect (changes in relative group size). The use of this method requires that the variable or phenomenon to be studied be quantitative, aggregate, and gradual. This method has been used to perceive the evolution of the level of fertility and the sources that are at the basis of this change. Explanatory analysis through logistic regression was used to identify the explanatory factors of teenage fertility from 2007, 2011 to 2017 and prioritize them. The following steps were followed: i) identification of the variables to be introduced into the model, ii) testing of the adequacy of the models to the data the Wald chi-square statistic at the 5% threshold was used, distribution of the significance of the explanatory variables by DHS, prioritization of the factors according to their contributions by making the difference between the chi-square of the final model including all the variables and the chi-square obtained from the model without these factors. Details on each element of the methodology can be found in annex.

22 II. RESULTS AND ANALYSIS

Simple and advanced decomposition used "standard of living" to compare driving factors within the ten years.

23 Period 1: 2007 to 2011

In terms of living standards, the total value of change (-3.64) is negative and tells us about a downward trend in the average number of adolescent girls with at least one child between 2007 and 2011. This trend is mainly due to the actual behavior of teenagers or the performance effect (104.71%) versus the composition effect (-4.74%), results on the graph below. Poor households (43.51%) contribute more to the decline in early fertility, followed by middleincome households (37.92%) and finally households with a high standard of living (21.28%) as shown below (figure 1) & (figure 2.)

London Journal of Medical and Health Research Thus, by breaking down the performance effect, we arrive at the results presented in the figure 3 below. The basic effect (255.26%) predominates over the differentiation effect (-128.43%) and the residual effect (-22.09%). The decline in adolescent fertility is due to all socioeconomic categories, without distinction. This can be explained by the fact that the basic policies put in place to improve the population's living conditions have had a real effect on early fertility, regardless of the household's standard of living. Poor households (58.06%) still contribute to the increase in early fertility, followed by middleincome households (20.52%) and finally wealthy households (21.42%).

Simple and advanced decomposition used as well "education level" to compare driving factors within the ten years.

24 Period 1: 2007 to 2011

There is a downward trend in the value of the total change (-3. Still regarding the level of education over the period 2011 to 2017, the total value of the change is (1.95%). It tells us about an upward trend in the average number of adolescent girls with at least one child between 2011 and 2017. This trend is mainly due to the actual behaviors of teenage girls or the performance effect (74.77%) versus the composition effect (25.23%).

Indeed, the preponderant contribution of adolescents with no education and primary education, over secondary education and above, in the decline in early fertility between 2007 and 2011, is largely attributable to the base effect. Thus, the set of measures taken by the state for mass and quality education of its population has had an impact on all social strata of adolescents. And these measures refer to the organic and institutional and legislative frameworks, as well as the human and financial means for the implementation of this policy Adolescent girls with secondary education (62.65%) contribute more to the increase in early fertility, followed by those with primary education (49.00%), while those without secondary education decrease this performance by only -11.65%. Girls' promiscuity, curiosity about sexuality, is due in part to the relaxation of social mores. Thus by decomposing the performance effect, the preponderant contribution of the secondary level of education and above, over the primary and no level, in the increase in early fertility between 2011 and 2017, is explained by the differences related to the categories (differentiation effect) Logistic regression was used to identify factors associated with adolescent fertility (Table 1). The result from the Wald chi-square statistic shows that the critical probability (p-value) values for 2007, 2011 and 2017 are all less than 0.005. Hence, we reject the hypothesis (H0) that the vector of effects of the different coefficients between these three years (2007, 2011 and 2017) is zero and conclude that at least one independent variable has an influence on the dependent variable. Based upon the logistic regression, significant variables from one survey to another one are: sex of head of household, education level, knowledge of contraception, knowledge of ovulatory cycle, ethnicity, age at first cohabitation, age of adolescent. Age at first intercourse, household standard of living, relationship to the head of the household, and household size explain the increase in adolescent fertility in Benin each year. Of the three surveys, age at first cohabitation, age at first sexual intercourse, and age of the adolescent are consistently among the top three factors.

25 Age at first sexual activity

According to this study, the earlier a teenager becomes sexually active, the greater her risk of early pregnancy. In fact, compared to those who have not yet begun sexual activity, adolescents who have had their first sexual activity at age 15 have a 2. **??**4 (2006) and 5.71 (2011) very significant (at the 1% threshold) risk of becoming pregnant before age 20. These risks can be amplified when sexual relations are maintained without the adolescent having a good control or consideration of her ovulation cycle.

26 Age of the adolescent

The analyses show that the risk of becoming pregnant before age 20 increases significantly with the age of the adolescent.

27 Age at first cohabitation

The age at first cohabitation was also found to be highly significant at the 1% level across the different study periods. Adolescents under 18 years of age are more likely to become pregnant than those who have not yet cohabited. It is 5.6 in 2006, 9.2 in 2011 and 3.41 in 2017. This age here is related to the age at first marriage and would justify the strong contribution of this variable to the phenomenon, as pregnant adolescents are mostly unmarried according to the descriptive analysis of the phenomenon.

28 Knowledge of the ovulatory cycle

This variable is significantly related to adolescent fertility status in 2007, 2014, and 2017. In 2007, adolescents with questionable knowledge of the ovulatory cycle were 1,60 times more likely to have children than those with good knowledge.

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Same trend in 2014 with a slightly higher risk (1,622).

30 Knowledge of a contraceptive method

The variable knowledge of a method is significantly related to the fertility status of adolescents in all periods. They are 42 times less likely to have an early pregnancy than those with modern knowledge. This may be because they take fewer risks or adopt abstinence.

31 Level of education

Adolescent educational attainment is highly significantly related to adolescent fertility status between 2007, 2014 at the 1% threshold.

For the year 2007, teenage girls with no grade are 1.86 more likely to have children than their high school and above counterparts. In 2011, this risk is 2.06.

Adolescents in primary school in 2006 were 1.56 times more likely to have early fertility than those in secondary school and above.

32 Household standard of living

It is significantly associated with adolescent fertility status in 2014 at the 1% threshold, adolescents from poor households are twice as likely to have children early as those from rich households. The risk among middle-income households compared to wealthy households is 2.44. And in 2007 and 2017, this variable is not significantly related to the phenomenon studied.

33 Relationship to head of household

Compared to CM girls, other adolescent girls related to the household head such as stepdaughters, granddaughter, and adopted daughter depending on the time period less likely to have a live birth before age 20.

34 Gender of head of household

This variable is not significantly related to adolescent fertility status in 2007 but is in 2006 and 2011 at the 1% threshold. Girls from male-headed households in 2017 are (50.2% in 2011 and 34.1% in 2011) less likely to have children early than their counterparts from female-headed households. This may be due to their rigor of men in raising their daughter. They are overall safer from early pregnancy than the household head's own daughters. The absence or inadequacy of education and information about sexuality may also be a cause.

In African societies, even more so in Benin, sex issues are still taboo. Age at first cohabitation, which also comes up again and again over the course of the DHS, basically provides information that adolescent girls who are not yet exposed to cohabitation with a person of the opposite sex are much less likely to become pregnant.

To effectively combat early pregnancy in Benin, priority actions must focus on sex education for adolescents. The control of contraception and the risks of early pregnancy and the postponement of the first sexual intercourse must be accentuated.

The second action would be to raise awareness among communities with a view to eliminating practices that tend to expose adolescent girls to pregnancy, aimed at postponing the age to the first cohabitation, which could hide many other realities, such as that of early marriage. The government will also need to focus on pro-poor growth policies.

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36 IV. CONCLUSIONS

In order to effectively combat early pregnancy in Benin, priority actions should be focused on sex education for adolescents. The mastery of contraception and the risks of early pregnancy and the postponement of the first sexual intercourse must be emphasized. The second action would be to increase community awareness with a view to eliminating practices that tend to expose teenagers to pregnancy, aiming to postpone the age of first cohabitation, which could hide many other realities, such as early marriage.

The negative social consequences that can affect the precocious pregnant adolescent (abortion, family rejection, school exclusion) make the subject of fertility a phenomenon that must attract the attention of decision makers. In the long term, what is the impact (level of education, family life, employment, integration into society) of today's precocious adolescent in her fertile life on tomorrow's mature woman?

Is it sexual courtship that leads to early marriage and therefore to cohabitation or is it the early age of first cohabitation that leads to first sexual intercourse in departments with high early fertility rates?

37 ANNEXES Annex 1: Descriptive analysis

In this analysis, we will develop a description of adolescent girls' fertility status behavior by several factors between 2007, 2014, and 2017. From this, the statistical relationships between the independent variables and the explanatory variable will be established

38 Chi-square test

This test will be carried out on variables taken in pairs, of a qualitative or quantitative nature grouped in classes, in order to provide information on their degree of association, with a margin of error (significance level) of 5%. In the case of our work, each of the independent variables will be crossed with the variable to be explained, which is the fertility status of adolescents.

In this test, the final decision is made after evaluating the differences between the observed numbers in the sample and the theoretical or calculated numbers that should ideally be observed if the hypothesis being tested were true. The conditions of validity of a Chi-square test are as follows: if the value of the critical probability (P-value) is less than 0.005 of the significance level, the hypothesis (H0) that the terms of the variable to be explained are independent of those of the explanatory variable is rejected. Otherwise, we accept this hypothesis.

The chi two is calculated as follows:? 2 = ?? ??é???????ð ??"ð ??"????ð ??"? -??????é? ?ð ??"ð ??"????ð ??"? ( ) 2 ??é???????ð ??"ð ??"????ð ??"?

Annex 2: Decomposition (to determine sources of change in adolescent fertility)

39 Some definitions related to decomposition analysis a) Family planning policy

We are talking about a set of elements that determine the performance of family planning. These include family planning programs (medical care, access to modern contraceptive methods, family code law) and the resources (financial, material and human) allocated to reproductive health.

40 b) Education policies

By this concept, we mean a set of measures taken by the State for a mass and quality education of its population. And these measures refer to the organic and institutional and legislative frameworks, as well as the human and financial means for the implementation of this policy. Individual behavior is determined by education, and its variation in the general population is likely to influence fertility behavior.

41 c) Economic policies

They take into account all the explicit or implicit measures taken by a state to influence the creation of national wealth and its distribution among the population in order to improve living conditions.

42 London Journal of Medical and Health Research d) Social change

It is any transformation (whether induced or spontaneous) in the structure, functioning or performance of a social community. This change can be qualitative (laws, norms, etc.) or quantitative (the rise infertility in a country, etc.).

Quantifiable changes may in turn be intrinsic to the society itself or come from the aggregation of individual behaviors. For example, a change in the way a country is elected is of the first type, while a change in the percentage of participation in the electoral process is of the second type.

43 e) Composition effect

The composition effect is the share of the change that results from the modification (or change) in the structure of the study population. In the case of our study, this effect is therefore the share of the change that would be attributable to the variation in the proportion of teenage mothers of different social categories from one period to another.

44 f) Behavioral or performance effect

Unlike the composition effect, the behavior effect is less mechanical. It indicates how much of the social change is attributed to the variation of the phenomenon in the various categories of the classification variable, whether they are at risk or not. The slightest decrease or increase in the phenomenon to be studied in any category can have an impact on the whole country.

This performance effect generates three other changes: baseline performance effect, differential performance effect and residual factors.

45 ? Basic performance

It is the probability that all social categories of the classification variable, without distinction, have a fluctuation in their fertility levels. This risk comes from events or policies that affect all categories.

46 ? Differentiation performance

It is exclusively a difference in performance related to a category of the classification variable.

47 ? Residual effect

This is any change not explained by either the performance effect or the composition effect. These changes are very often attributable to spontaneous changes in some social phenomenon.

48 Décomposition simple

Simple decomposition identifies the immediate sources of social change by estimating the relative contribution of two or more components to that change. This contribution is of two kinds, including the performance effect (changes in group performance) and the composition effect (changes in the relative size of groups).

The use of this method requires that the variable or phenomenon to be studied be quantitative, aggregated, and gradual. And the formula looks like this: This method will be used in our work for both years (t1=2007 and t2=2014) and (t3=2017), to perceive the evolution of the fertility level and the sources behind this change. And for the classification variable, we used the education level and standard of living of adolescent girls.? ? = ?

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Once the performance effect predominates, the estimation of the statistical relationship of this effect and the classification variables is done as follows: : represents the average increase in the effects of ? the classification variable between the two periods.? ? = ? + ?? ? + µ

In case the definitions of the categories of x do not change between years t and t', the second term of this equation is 0, and x is equal to x. and the equation will therefore be:

50 BIBLIOGRAPHIC REFERENCES

51 III.3 Specification of the analysis variables

This section allows us to define the different variables that will be used in our study, i.e. the dependent variable and the independent variables.

52 III.3.1 Dependent variable

Our dependent variable is the fertility status of girls aged 15-19 years in 2007, 2011 and 2017 in Benin. This variable is captured in the DHS surveys from the variable V201: the total number of children born alive. The modalities of this variable have been grouped into two groups. These are no children (all those with 0 children born alive); at least one child (all those with one or more children born alive).

It can be defined as any pregnancy contracted before the age of 20 that exposes the woman to risks related to the immaturity of her body and to social and economic well-being. Using the DHS terminology, this will be any pregnancy occurring in an adolescent aged 15-19 years at the time of the survey. This concept will be captured by the fertility status of the adolescent.

53 III.3.2 Independent variables

In order to achieve the objectives that we set upstream, 14 independent variables were mobilized, some of which were recoded and others were constructed from those that already existed in the database.

Among the independent variables that have been recoded are:

54 III.3.2.1 Ethnicity

This variable was grouped into 11 modalities which are: Adja, Bariba, Dendi, Fon, Yoa, Lokpa, Betamaribe, Peulh, Yoruba, Other Beninese, Other nationalities

55 III.3.2.2 Knowledge of the ovulatory cycle

In order to measure the influence of knowledge of the ovulatory cycle on the fertility status of adolescents, we adopted a grouping of three modalities: 1. no knowledge; 2. doubtful knowledge; 3. good knowledge.

56 III.3.2.3 Knowledge of a contraceptive method

Knowledge of a contraceptive method was grouped into three categories: 1. no method; 2. traditional method; 3. modern method.

57 III.3.2.4 Age at first sexual intercourse

This age refers to when the girl had her first sexual intercourse. We have grouped it into three modalities: 1. have not yet had sexual intercourse; 2. at first union; 3. 8 to 15 years old; 4. 16 to 19 years old.

58 III.3.2.5 Level of education

We refer to the level that adolescent girls reach in the formal education system. This variable has been recoded into two modalities: 1. no level; 2. primary; 3. secondary and above. London Journal of Medical and Health Research

59 Household standard of living

This variable is grouped into three modalities: 1. poor (very poor and poor); 2. average; 3. rich (very rich and rich).

In addition to these redesigned variables, another variable was created (i.e., composite variable), which is the degree of media exposure variable.

60 III.3.2.7 Degree of media exposure

Three variables contributed to its creation, including exposure to radio (V384A), television (V384B) and newspapers or magazines (V384C). Thus it was coded in four modalities: none; low; high; very high.

The rest of the variables were not modified, such as: gender of the head of the household, place of residence and province of residence.

61 II.3.8 Definition of other study concepts II.3.8.1 Residence context

It refers to the environment in which the individual lives and will be understood through the region and the environment of residence of the adolescent. In the case of the home environment, the city contrasts with the village in terms of availability of infrastructure (sanitation, etc.), lifestyles and types of activities. The city also offers advantages in terms of urbanization and many other attractive factors such as: availability of jobs, health services. Decent housing, good schools, etc. This disparity between these two environments is also found between the different departments.

The above variables have been grouped into three main clusters. The following section presents these groups.

62 II.3.8.2 socio-economic characteristics

The socioeconomic environment includes any element that can contribute to the development of the adolescent's human capital. It includes conditions related to education, health, nutrition and financial opportunities (such as having an income) that surround the adolescent. As an operational variable, we have the proportion of weak households.

63 III.3.8.3 Household characteristics

It is a set of elements, norms, socio-cultural and economic values in a household that determine the behavior of adolescent girls with respect to fertility. They are determined by ethnicity, household standard of living, household size, and the gender of the head of household.

64 III.3.8.4 Individual characteristics of the adolescent

They refer to each of the cultural, social, physical or biological characteristics that distinguish an adolescent girl from others. It is also a set of elements that allows the girl to forge her own personality in order to differentiate herself from her peers and to conform to certain social rules or reject others. These will be captured by media exposure, education level, knowledge of the ovulatory cycle, knowledge of contraceptive methods, marital status, age at first intercourse and use of contraceptive methods.

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Figure 1: Figure 1 :

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Figure 2: Figure 3 :

Figure 3:

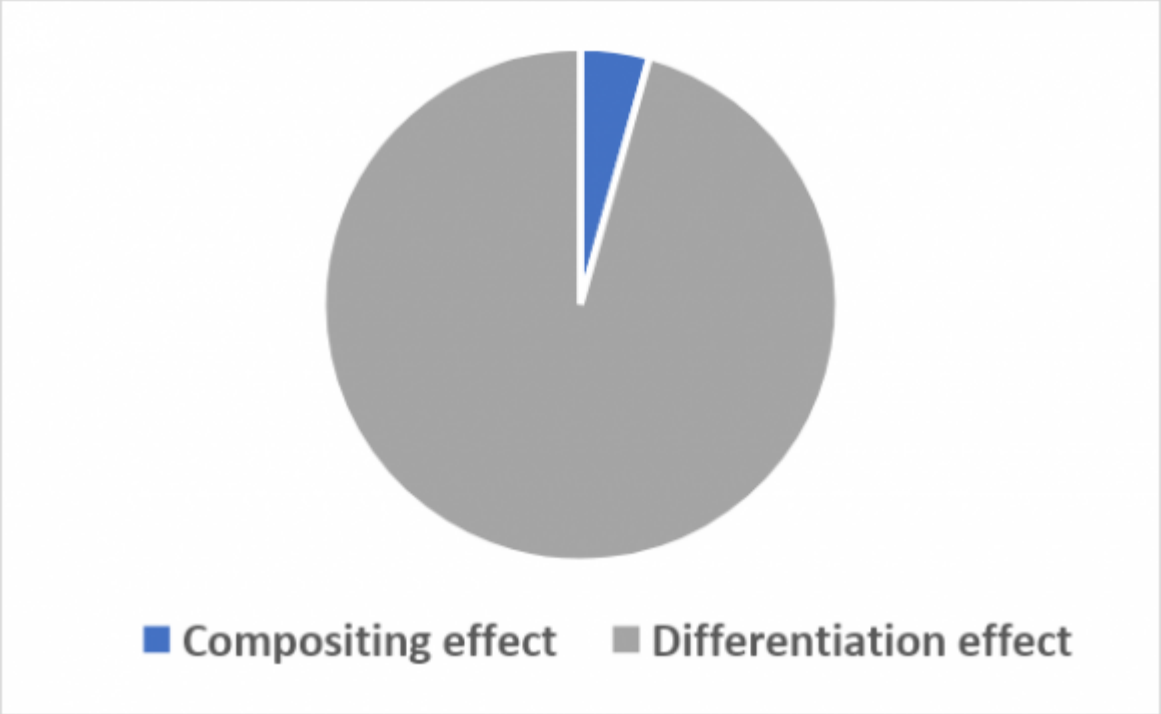

Figure 4:

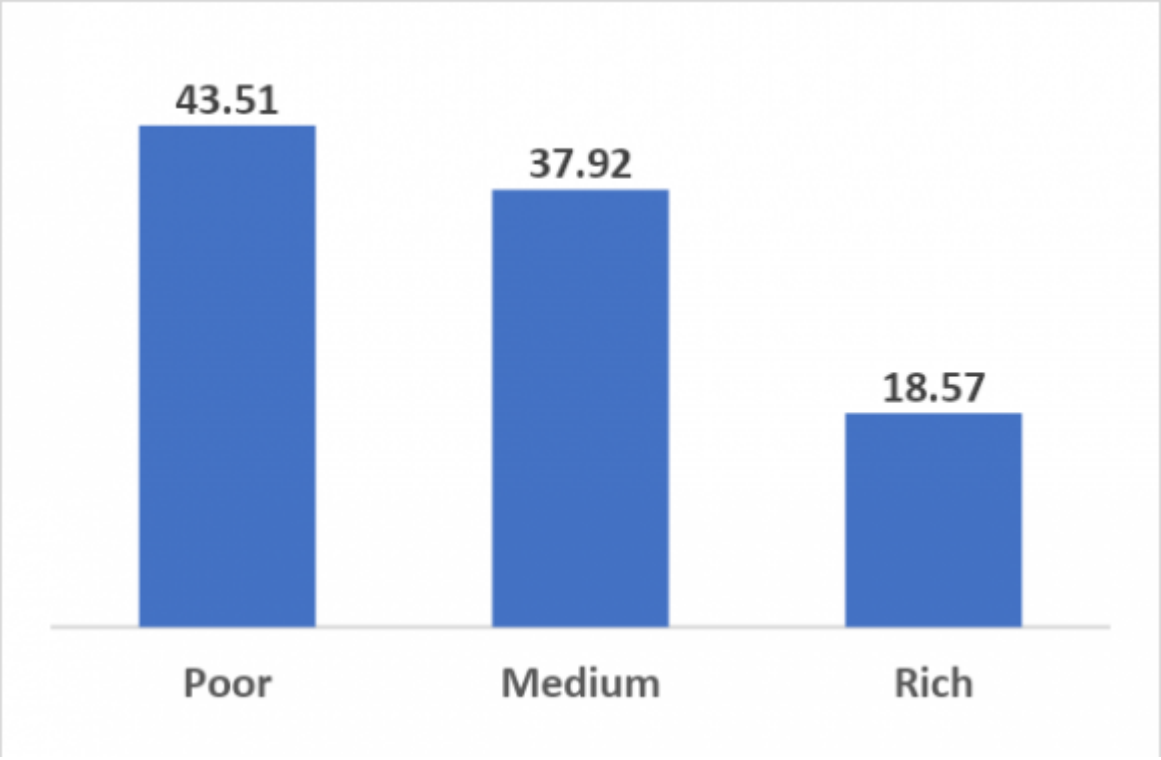

Figure 5:

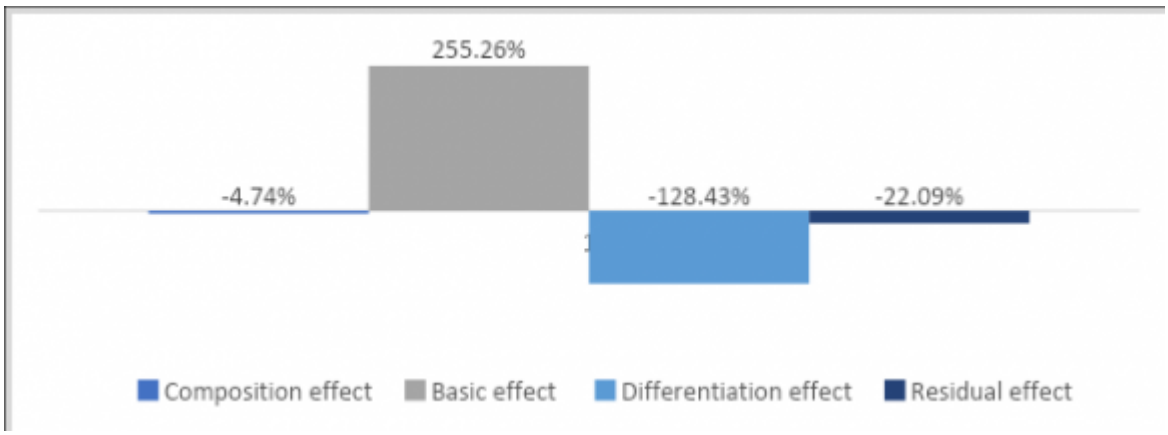

Figure 6:

1

London Journal of Medical and Health Research	Explanatory variables Household size	EDSB-2006	EDSB-2011	EDSB-2017
	Household under 6 years old Household between 6 and 9 Household of more than 10 Age at first cohabitation Under 18 years old	0.363*** 0.507*** ref 5.648***	0.481** 0.745ns ref 9.210***	0.550** 1.119ns ref 3.411***
	No cohabitation	0.048***	0.143***	0.089***
	Age of first sexual intercourse			
	From 8 to 15 years old	2.214***	5.714***	2.01ns
	From 16 to 19 years old	1.589**	1.817**	4.8 ns
	Knowledge of contraception			
	No	0.629**	0.482***	0.583*
	Traditional	1.373ns	0.685ns	0.760ns
	Modern	ref	ref	ref
	Knowledge of the ovulatory cycle			
	No	1.076ns	0.948ns	0.797ns
	Doubtful	1.604**	1.622*	1.037ns

Figure 7: Table 1 :

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Figure 8: Table 11 :

.1 ANNEXES 1

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