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Implications for Curriculum Innovation on Women Education as a Derivative of the Effects of Maternal Fertility on Educational Attainment in Cameroon

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Abstract: *This paper focuses on women education. Specifically, it examines the implications for curriculum innovation resulting from the effects of maternal fertility on maternal educational attainment by place of residence in Cameroon. The data used for the paper is the Cameroon's Demographic and Health Survey for 2011. The control function approach was used to analyze the data. The results indicate that, each additional child affects mother's education negatively in both urban and rural areas and the coefficient is significantly higher in urban areas than in rural areas. Based on the results, the paper recommends social innovation for education. Curriculum innovation policies and strategies should focus on education to transform lives especially for women by promoting pedagogy that focuses on cooperation, communication and creativity. Curriculum innovation policies and strategies should also focus on increasing and upgrading educational facilities in rural areas.*

Keywords: *Cameroon, control function, curriculum innovation, educational attainment, maternal fertility*

I.　Introduction

Sub-Saharan Africa (SSA) governments, communities and private sector continue to introduce innovative approaches to women education in order to tackle societal challenges. Increasingly, to achieve their objective these institutions have committed time, material, financial and human resources to women's education. Despite the huge resources invested in women's education, the connection between the implications of curriculum innovation and women education as derived from the effects of maternal fertility and educational attainment remain an under-researched area.

1.1 Background to the study

Nowadays, many SSA countries, Cameroon included, have adopted and implemented strategies on curriculum innovation. Specifically, in Cameroon, there has been a shift in women education dialogue from education for all (via the millennium development goals) to education for accessibility (Growth and Employment Strategy Paper, 2009). Recently, there has been a further shift from education for accessibility to education that empowered values in women (via sustainable development goals). In the application of this strategy, curriculum innovators in Cameroon embarked on an innovation in school curriculum in favour of a more sustainable education. Such an innovation in the school curriculum necessitates teachers' and learners' concerns about the adoption and implementation of the innovation. This has made for an inability to say with certainty, the nature of the adoption and implementation of curriculum innovation or to present with clarity, the extent to which curriculum innovation towards women education have been achieved in the country.

A prosaic understanding of curriculum innovation is the introduction of something novel or new ideas that work to address pressing unmet needs (Amadioha, 2016). Judging by this premise, curriculum innovation in the Cameroonian educational system means a novel solution to a social problem that is more effective, efficient and sustainable. With such predictions it is believed that, curriculum innovations also address the use of communication technologies like radio, television and posters including reproductive technologies like pills or birth interval spacing (Fokong, Fonchamnyo and Njimanted, 2019). The foregoing argument is suggesting that, innovations in technologies solve problems and have potential benefits for improving women well-being in terms of education,

health, labour force participation, income and so on. In this light, curriculum innovation for sustainability means educational programmes in Cameroon have created learning opportunities for learners to develop different competences that will enable them think critically, analytically and in divergent manner by reasoning clearly, so that they can be strategic in all decision making situations. From the aforementioned discussions to this problem, this paper attempts to find out whether in situations where curriculum innovation fails to respect the above conditions, there is a tendency that the educational applicability of what is taught fails to address the needs and interest of learners and their society.

A second angle to this problem and thus the motivation behind this paper rests on the fact that, women's education in Cameroon is of interest to researchers (Fokong, et al., 2019; Baye and Sitan, 2016). The critical issue is to strike a balance between maternal fertility and educational attainment. Evidently, the fertility rate in Cameroon is 4.8 births per woman (International Monetary Fund, 2018). One of the major reasons offered for this high fertility has been the inability of women to attain higher levels of education (Fokong et al., 2019). The argument here is that, the value created by curriculum innovation which accrues to the society and private individual is uncertain. The major rhetorical question is how curriculum innovation focuses on learners' initiative, degree of participation and transfer of knowledge and skills to the place of residence.Thus, holistically the concern and question here is: 'what are the implications for curriculum innovation resulting from the effects of maternal fertility on maternal educational attainment by place of residence in Cameroon'. This implies that, this paper aims to examine the implications for curriculum innovation resulting from the effects of maternal fertility on maternal educational attainment by place of residence in Cameroon. Specifically, this paper seeks to examine the following objectives:
1) To assess the effects of maternal fertility on maternal educational attainment by place of residence and;
2) To explain some implications for curriculum innovation on women's education.

Based on the objectives, it is hypothesized that:

H_0: Maternal fertility is not significantly affecting maternal educational attainment in Cameroon by place of residence.

H_1: Maternal fertility is significantly affecting maternal educational attainment in Cameroon by place of residence.

II.   Review of Related Literature

From a conceptual perspective, curriculum innovations is defined as the introduction of novel factor, perceived as new by a given school and community, supported by a driving force, and implemented as a practical advance that deviates from established or traditional forms (Mkpa and Izuagba, 2006). According to this definition, novel factor means something new (that is, new concepts, approaches or materials) is introduced to make the curriculum better to those for whom the curriculum is planned. In a further twist, curriculum innovation refers to a technology, which improves educational outcomes, working relationships within the school system (Pinus, 1974). This implies that curriculum innovation reduces the cost of education without significantly reducing the quality and quantity of desired ones (Pinus, 1974). Surmising from both definitions curriculum innovation means deliberately preferred planned modification which is intended to yield better results. The term educational attainment means years of schooling completed by an individual whereas maternal fertility refers to the total number of children that a woman has over her life time (Baye and Sitan, 2016). These definitions will guide the tempo and structure of the study.

The guiding theory for this paper is microeconomic theory on fertility (Becker 1981). This theory is preferred because of its emphasis on the special interaction between quality and quantity of children. This theory also addresses the relevance of an individual preference and responsibilities to determine his/her fertility alongside socioeconomic factors such as income, education and environment (Becker and Tomes, 1986). Empirically, Fokong et al. (2019) argue that environmental factors (such as rainfall, distance to health facilities) and household characteristics (such as mother's age, mother's age at first birth, husband's presence in the house, maternal participation in the labour market, household size, father's education, mother's body mass index, birth interval, mother's exposure to mass media, children under the age of five in the household, household socio economic status, mother belonging to a friendship association and household place of residence) affects maternal educational attainment. These results are in line with Tang and Tey's (2017), Baye and Sitan's (2016) findings that there are difference channels through which maternal education affects fertility. In a further twist, Sackey (2005), Schultz and Mwabu (2003) results indicated that increased wealth and female labour participation lowered fertility. However, these studies do not account for endogeneity and heterogeneity. In a nutshell, a handful of the existing studies have revealed negative associations between maternal educational attainment and fertility but surprisingly these studies

do not account for potential endogeneity and heterogeneity that may be due to unobservable affecting fertility and its covariate.

From the perspective of curriculum innovation, Ige, Omodunbi and Omolade (2020) research study reveals that the curriculum innovations made by Governor Aregbesola (between 2011 to 2018) in Osun State education sector were largely retrogressive. Their findings indicate that, curriculum innovations such as: the reorganizing of the education administration of the state, re-classification of school, use of common uniform, new infrastructures, introduction of Opon-Imo (that is, tablet of knowledge) and new advanced adult education, were largely for selfish gains and brought backwardness and hardship on teachers, students and even parents. Contrary to Ige, et al. (2020) findings, Ritzer (2012) and Osokoya (2003) studies argue that, curriculum innovations in education sector should target how people's life can be made better and should be able to solve societal problems. Similarly, Saint-Martin (2000) observes that curriculum innovation in whatsoever form should be able to target objectives that concern: an improvement to public life, elimination of corruption, increment in representativeness and accountability as well as, limitation of nepotism and patronage. Generally, the empirical studies on curriculum innovation provide mix results. On the one hand, some studies (Ritzer, 2012; Osokoya, 2003 and Saint-Martin, 2000) reveal that curriculum innovations have a positive implication on individuals' well-being. On the other hand, Ige, et al. (2020) study indicates that curriculum innovations have a negative implication on individuals' well-being.

III.　　Methodology

The econometric technique used for the paper is the control function approach. The equation for selective fertility and maternal educational attainment is specified as follows:

$$MEDUC= S_1\delta_{MEDUC}+ \Theta_1 MF + \varepsilon 1 (1)$$

$$MF= S_2\delta_{MF} + \Theta_2 MEDUC + \varepsilon 2 (2)$$

Where: MEDUC stands for maternal educational attainment, measured by mother's education in complete years. MF stands for maternal fertility captured by the total number of children ever born by a woman. S_1 is a vector of exogenous variables that determine MEDUC. S_2 is a vector of exogenous variables that determine maternal fertility (MF). These exogenous variables include: mother's age, mother's age at first birth, husband's presence in the house, maternal participation in the labour market, household size, father's education, mother's body mass index, birth interval, mother's exposure to mass media, children under the age of five in the household, household socio economic status, mother belonging to a friendship association and household place of residence. δ and Θ are parameters to be estimated while $\varepsilon 1$ and $\varepsilon 2$ are the two structural error terms.

$$MF= S_2\delta_{mf} + \Theta_2(S_1\delta_{MEDUC}+ \Theta_1 MF + \varepsilon 1) + \varepsilon 2 (3)$$

To solve for maternal fertility (MF), the assumption must be made that $\Theta_2 \Theta_1 \neq 1$ to yield to equations *4* and *5*:

$$(1 - \Theta_2 \Theta_1)MF = \Theta_2\beta_1\delta_{MEDUC} + \beta_2\delta_{mf} +\Theta_2\varepsilon 1+ \varepsilon 2): \qquad (4)$$

$$MF= \beta_2 Z_{MEDUC}+ \beta_2 Z_{mf} + \varepsilon 3 (5)$$

$Where: Z_{MEDUC}= \frac{\theta 2\delta MEDUC}{1-\theta 2\theta 1}$ and $Z_{MF} = \frac{\delta MF}{1-\theta 2\theta 1}$ as well as $\varepsilon 3 = \frac{\theta 2\varepsilon 1}{1-\theta 2\theta 1}$.

Equation 5, which expresses MF in terms of the vectors of exogenous variables S_1 and S_2, and the error terms, is the reduced form equation for MF. The vector of parameters Z_{MEDUC} and Z_{MF} are reduced form parameters. These reduced form parameters are nonlinear functions of the structural parameters in equations *1* and *2*. The reduced form error, ε is a linear function of the structural error terms, $\varepsilon 1$ and $\varepsilon 2$. Since $\varepsilon 1$ and $\varepsilon 2$ are each uncorrelated with S_1 and S_2, $\varepsilon 3$ is also uncorrelated with S_1 and S_2. Thus, the vectors of parameters Z_{MEDUC} and Z_{MF} can be consistently estimated by the OLS. Since, maternal fertility is a key determinant of maternal educational attainment (Fokong et al. 2019) a conventional strategy to reduce the problem of endogeneity is to use the instrumental variables (IV) method. The instruments for fertility are those factors that affect fertility choices without directly influencing maternal educational attainment (such as: rainfall and distance from home to health facility).

Heterogeneity of maternal educational attainment due to non-linear interaction of maternal fertility with unobservable variables could bias the estimated structural coefficients. This may result from mother-specific unobserved differences in education or genetic cognitive endowments of mothers. Again, estimates may not be applicable to all mothers aged 15 to 49 years because mothers whose levels of education in complete years were not registered are not captured in equation 1. Thus, failing to consider an approach that reflects the entire sample of mothers mean that parameter estimates may suffer from sample selection bias, except selection of mothers into the estimation sample is a random process. We appeal to the control function approach to address these potential issues (Schultz and Mwabu, 2003). Thus, to account for potential endogeneity, heterogeneity of responses of unobservable

that are complementing with or substituting for maternal fertility and sample selection, equation *1* is augmented to equation *6*, which is a control function model:

$$MEDUC = \beta_0 + S_1\delta + \Theta_1 MF + \beta_1 \hat{\varepsilon}_3 + \Phi(\hat{\varepsilon}_3 MF) + U \qquad (6)$$

Where $\hat{\varepsilon}_3$ is residual of MF; $\hat{\varepsilon}_3 MF$ is interaction of maternal fertility with its residual and u is the error term of the estimating equation; and ∂, θ, β *and* Φ are parameters to be estimated. $\hat{\varepsilon}_3$ and $\hat{\varepsilon}_3 MF$ are control function variables. The predicted error term ($\hat{\varepsilon}_3$), serves as a control for unobservable variables that are correlated with MF. Hence, allowing this endogenous input to be treated as if it were an exogenous covariate during estimation. The interaction term ($\hat{\varepsilon}_3 MF$), controls for the effect of neglected non-linear interaction of unobservable variables with the input into maternal educational attainment.

The data used for the paper is the Cameroon's Demographic and Health Survey for 2011. The area of study is Cameroon. The design used is the survey research design. The target population of the study consisted of women, men and children from the ten regions of Cameroon. The sample population consisted of a total of 15,060 households. The sample was collected using representative clustering survey sampling techniques at the national level. The instruments used for data collection were questionnaires and interviews. It is worthy to note that, all men and women age 15-49 were eligible for interview. The data collected provided detailed information on individual and household characteristics like fertility, maternal education and health, ethnicity, household size, household socio economic status, access to television, place of residence, land ownership, nutritional status of mother and children, among others.

3. Presentation and Discussion of Results
Table 1: Weighted Sample Statistics of Selected Variables

Variables	N	Mean	SD	Min	Max
Outcome Variable					
Mother's Educational Attainment in complete years	11732	4.593	4.046	0	17
MainEndogenous Variable					
Maternal Fertility	11732	4.319	2.617	0	15
Endogenous Instruments					
Cluster Mean of Distance to Health Facility (1= Easy Access, 0 otherwise)	11732	0.192	0.394	0	1
Rainfall (Annual precipitation given in millimeters)	11732	369.784	199.95	216.356	941.081
Exogenous Characteristics					
Mother's Age	11732	28.495	6.975	15	49
Mother's Age at First Birth	11732	18.516	3.580	12	39
Father's Present in the House (1= present, 0 otherwise)	11732	0.724	0.446	0	1
Mother's Participation in the Labour Market (1= Mother participated, 0 otherwise)	11732	0.684	0.464	0	1
Household Size	11732	10.212	5.599	1	43
Father's Education in complete years	11732	5.056	4.871	0	17
Mother's Body Mass Index ($1=18.50 kg/m^2$, 0 otherwise)	11732	1871.973	617.673	1327	5946
Birth Interval (1=short birth interval, 0 otherwise)	11732	31.393	22.139	9	220
Mass Media Exposure (1= Access to television, 0 otherwise)	11732	0.483	0.499	0	1
Number of Children Below the Age of 5	11732	2.783	1.733	0	19
Ethnicity	11732	4.614	2.688	1	10
Household Socio-Economic Status (1= Rich, 0 otherwise)	11732	0.538	0.498	0	1

Mother Belonging to a Friendship Association (1= Mother Belong, 0 otherwise)	11732	0.025	0.157	0	1
Place of Residence (1= urban, 0 otherwise)	11732	0.394	0.488	0	1
Control Variables					
Predicted Maternal Fertility Residual	11679	-0.007	1.045	-6.274	4.712
Predicted Interaction Term (Maternal Fertility times its Predicted Residual)	11679	1.137	7.250	-41.001	70.685

Source: Computed by the author from 2011 Cameroon Demographic Health Survey (DHS)

Table 1 indicates that, the number of years of education on the average for mothers is 4.59 years as opposed to 5.05 years for fathers. The number of years of schooling for both women and men range from 0 years (no education) to 17 years (first degree). The average number of births that a woman has over her life time is 4.31 whereas, the total number of births that a woman has over her life time range from 1 to 15 children. The mean distance from a woman's home to a health facility is 0.19 kilometers. The average annual rainfall variation for 2011 precipitation for the different regions of Cameroon ranges from 216.356 to 941.081 millimeters with the mean annual rainfall being 369.784 millimeters.

As concern the exogenous characteristics, the 2011 DHS shows that mother's age at birth ranges from 15 years to 49 years. The youngest mother had her first child at 12 years while the oldest had her first child at the age of 39 years. The average age of mothers at birth is 28.49 years and the average age of mothers at first birth is 18.51 years. On average 0.72 of fathers are present in the house and 0.68 of women living in the household are active and working. The average number of persons living per house is 10.21. The highest number of persons living per house is 43 while the least is 1 person per house. The average body mass index of mothers is 1871.97. The highest body mass index registered by mothers is 5946 while the lowest is 1327. The birth spacing varies between 9 months and 220 months. On average, the birth spacing between one child and the next is 31.39 months. The mean number of women exposed to mass media such as a television is 0.48. The number of children under the age of five years living in a household range from 0 to 19 children and the number of children under the age of five years on the average in the household is 2.78. Of the total number of households interviewed in 2011, 4.61 on average belong to a specific ethnic group. Household socio economic status is averagely 0.53. The mean number of women belonging to a friendship association and living in an urban area is 0.02 and 0.39 respectively.

3.1 Objective 1 The effects of maternal fertility on maternal educational attainment by place of residence
Table 2: The effect of Maternal Fertility on Educational Attainment by Place of Residence

Variables	Estimation Method: Control Function	
	Urban	**Rural**
Maternal Fertility	-0.278*** (-2.98)	-0.227*** (-4.10)
Mother's Age	0.025 (0.80)	0.033* (1.66)
Mother's Age at First Birth	0.250*** (7.40)	0.043** (2.07)
Father's Present in the House (1= Father is present, 0 otherwise)	-0.719*** (-7.24)	-0.916*** (-13.96)
Mother's Participation in the Labour Market (1= Mother participated, 0 otherwise)	0.013 (0.15)	-0.006 (-0.11)
Household Size	-0.061*** (-5.41)	-0.007 (-1.14)
Father's Education	0.222*** (25.96)	0.258*** (35.84)
Mother's Body Mass Index (1=18.50kg/m^2, 0 otherwise)	0.0002337*** (3.65)	0.0002614*** (4.91)
Birth Interval (1=short birth interval, 0 otherwise)	-0.001 (-0.59)	-0.004** (-2.40)
Mass Media Exposure (1= Access to television, 0 otherwise)	1.184*** (10.87)	0.944*** (14.25)

Number of Children Below the Age of 5	-0.122*** (-2.95)	-0.074*** (-3.35)
Ethnicity	0.478*** (25.77)	0.396*** (34.42)
Household Socio-Economic Status	1.008*** (4.52)	1.131*** (16.00)
Constant	-2.866*** (-7.80)	0.009 (0.05)
Predicted interaction term (fertility x its residual)	-0.006 (-0.40)	0.012* (1.64)
$R2$/Pseudo-$R2$	0.5527	0.6133
F-Stat [df; p-val]	385.84 [15, 4656; 0.0000]	741.77[15, 6991, 0.0000]
Observations	**4672**	**7007**

Source: Computed by the author from 2011 Cameroon DHS; ***, ** and * indicate 1%, 5% and 10% levels of significance, respectively. Values in parentheses represent robust t-statistics

With regards to objective 1, Column 1 and 2 of Table 2 presents the effects of maternal fertility on educational attainment from the control function equation. Increasing maternal fertility by one child, mother's level of school attainment decreases significantly higher in urban area (0.278 standard scores) than in rural areas (0.227 standard scores), controlling for other covariates. Both effects are significant at 1 percent level. This result is consistent with that of Becker (1981), Schultz and Mwabu (2003). An increase in mother's age at first birth increases mother's schooling by 0.250 standard scores in urban areas as opposed to 0.043 standard scores in rural areas. This effect is significant at 1 percent level in urban areas as opposed to the 5 percent level in rural area. This result reaffirms Tang and Tey (2017), findings that, the more advanced the education of a woman, the older the woman at the birth of her first child.

The negative coefficients on father's presence in the house in both urban and rural area have a limiting effect on mother's education. Both results are statistically significant at 1 percent level of significance. However, the estimate on father's presence in the house is about 0.197 standard score higher in rural areas than in urban areas. Some possible reasons for this decrease in mother's education could be that their household's sizes are very large, they have many children in the household below the age of five and they have short birth intervals. Contrary to rural areas where the estimate of household size is smaller (0.007) and insignificant; this estimate is larger (0.061) and significant at 1 percent level in urban areas. The number of children below the age of five has a significant and negative effect on mother's level of educational attainment in urban and rural areas. Interestingly, both results are statistically significant at 1 percent level. However, the estimate of under five children in the household is about 0.048 standard score higher in urban areas than in rural areas. Moreover, spacing of birth by women has a negative and insignificant effect on women's schooling in urban areas as opposed to rural areas where the effect is negative but significant at 5 percent level. It is worthy to note that, the estimate on spacing of birth by women is about 0.003 standard score higher in rural areas than in urban areas.

In urban places women participation in the labour market has a positive (0.013) effect on women's schooling. Whereas, in rural places an increase in mother's work outside the home decreases mother's schooling by 0.006 standard scores. Both coefficients are insignificant. It is worthy to note that, household socio economic status has a positive and significant effect on women's schooling in urban and rural places. The estimated coefficient on household socio economic status is about 0.123 standard score lower in urban areas than in rural areas. Nevertheless, both results are statistically significant at 1 percent level. The results suggest that an increase in female labour participation and income increases women's education and lowers maternal fertility in urban areas. This finding is similar to that of Baye and Sitan (2016) and Sackey (2005).

Father's schooling has a significant and positive effect on mother's level of educational attainment in urban and rural areas. Interestingly, both results are statistically significant at 1 percent level. However, the estimate on father's schooling is about 0.036 standard score higher in rural areas than in urban areas. This result suggests that an increase in father's wealth via increase education and labour market participation leads to an increase in mother's human capital development and well-being. This is evidence by the findings of Becker and Tomes (1986) and the control function estimated coefficients on mother's body mass index that are significant (1 percent level) and positively affects maternal level of educational attainment in both urban and rural places.

The estimated coefficient on women ethnicity has a positive and significant effect on women's schooling in urban and rural places. Specifically, both results are statistically significant at 1 percent level and the estimate is about 0.082 standard score higher in urban areas than in rural areas. Again the results show that, the estimated coefficient on women openness to mass media has a positive and significant effect on women's schooling in urban and rural places. Specifically, both results are statistically significant at 1 percent level. However, the estimate on mass media is about 0.24 standard score higher in urban areas than in rural areas. This result is in line with Fokong et al. (2019) findings.

As concern the robustness of the results it is observed that, the variables used in the models were appropriate. For example, the estimated coefficient of the interaction term is negative and insignificant in urban areas as opposed to rural areas where this estimated coefficient is positive and significant at 5 percent level. This indicates that, the result of control function with interaction is having a stronger magnitude in the rural areas as compared to the urban areas. Thus, the null hypothesis that maternal fertility is not significantly affecting maternal educational attainment in Cameroon by place of residence is rejected. This implies that maternal fertility is significantly affecting maternal educational attainment in Cameroon by place of residence.

3.2 Objective 2 Some implications for curriculum innovation on women's education

In terms of objective 2 which emphasizes some implications for curriculum innovation on women's education it was observed that, women ethnicity has a positive and significant effect on women's schooling in urban and rural places. This calls for an urgent need for curriculum innovation policies and strategies to focus on transforming lives especially for women by promoting pedagogy that stresses cooperation, communication and creativity.This means that an innovative curriculum must guarantee freedom of speech, press and religion. Thus, women involvement in curriculum innovation process is necessary. This finding is consistent with the predictions in the empirical literature regarding the positive implications of curriculum innovation on educational attainment. Specifically, this finding is in line with Saint-martin (2000) observation that curriculum innovation in whatsoever form should target lifelong education, cooperation, responsibility and eliminates discrimination.

It was also realized that in urban places women participation in the labour market has a positive effect on women's schooling. This means that curriculum innovation policies and strategies in Cameroon have focus on providing educational concepts, approaches or materials resources that permits women to acquire knowledge and skills to seek solutions to economic and social problems within their locality. This implies that an innovative curriculum must be dynamic, relevant and promote the transfer of learning to the immediate environment. Although this findings stresses the fact that curriculum innovation means something new is introduced to make the curriculum better to those for whom the curriculum is planned (Mkpa and Izuagba, 2006); it contradicts Ige, et al. (2020) arguments that curriculum innovations in new infrastructures and new advanced adult education bring backwardness and hardship on learners and even parents.

This study revealed that father's schooling has a significant and positive effect on mother's level of educational attainment in urban and rural areas. This implies that, husbands through effective collaboration and communication in the household should support their wives to pursuit their education, for without that support it is unlikely that they will attain higher levels of education. Thus, social innovation for men's education is required. This finding aligns with Ritzer (2012) explanations that curriculum innovation in education sector should be the process by which individuals acquire needed intellectual, physical and moral skills for a proper functioning in society.

Scaffolding of learning through the use of curriculum innovation like technologies is a prerequisite for meaningful learning to occur (Pinus, 1974). The findings revealed that women openness to mass media has a positive and significant effect on women's schooling in urban and rural places. This implies that curriculum innovation should be shaped in such a way as to adequately integrate different technologies in the design of curriculum projects. Hence, there is an urgent need for increasing and upgrading educational facilities in rural areas. This result is in line with Fokong et al. (2019) findings.

In a nutshell, the findings revealed positive implications for curriculum innovation on women's education. Generally, the findings reiterate the fact that, good curriculum innovation policy on women's education must cater for the needs of the people in the society and target particular objectives within a stipulated time. Fokong et al. (2019), Ritzer (2012), Saint-martin (2000) as well as Osokoya (2003) corroborate these findings.

IV.   Conclusion

The paper has focused predominantly on the effects of maternal fertility on maternal educational attainment with respect to place of residence and on some implications for curriculum innovation on women's education. The use of cross section dataset is a limitation. This is because cross section dataset is simply a snapshot of the reality (or

a given time period). Thus, over the years, it may not reflect the reality. In spite of this limitation, the paper posits that maternal fertility affects maternal educational attainment negatively in both urban and rural areas in Cameroon, however, increasing mother's age and mother's age at first birth increases mother's educational attainment. These issues are useful in the context of curriculum innovation for women's education in the urban and rural areas. Such knowledge will help in the short run to inform curriculum innovators on the need to reinforce and to introduce communication technologies and reproductive technologies in the school curriculum in urban and rural areas respectively. In the long run, the reinforcement and introduction of communication and reproductive technologies in the school curriculum will increase women's well-being through access to mass media exposure, increase maternal education and labour force participation in both urban and rural areas of Cameroon.

V.   Recommendations

As a result of the findings it is recommend that, women should substitute their demand for an additional child with demand for having high quality education. Moreover, educational stakeholders through the ministries of education should intensify social innovation for women education. To foster the development of sustainable skills curriculum innovations that promote adaptive learning via cooperation, communication and creativity is highly recommended for women's education. This is a major step towards women empowerment and fertility reduction in urban and rural areas of Cameroon.

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