

# A Re-assessment of the Effects of Female Education and Employment on Fertility in Nigeria

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## **Abstract**

This paper examines the relationship between female education, employment and fertility in Nigeria through the lens of the 2003 and 2008 NDHS data sets. Data analysis employed OLS regression technique. Result shows that female education was inversely related to children ever born and ideal number of children. Almost all the categories of occupations indicated a positive relationship with children ever born. A woman working for someone else or for a family member is very likely to adopt restrictive family size goals. Employments that take women from their homes are capable of promoting small family size in the country. The study concludes that promoting female schooling in all parts of the country is very likely to facilitate more rapid fertility decline. However, female labour force participation in the country is likely not to have attained the status to exert any significant negative effect on fertility but employment away from home should be encouraged.

## **Introduction**

Nigeria is the most populous black nation with a population of about 150 million. The country's Total Fertility Rate (TFR) is still as high as 5.7, one of the highest fertility levels in the world. Although onset of demographic transition in the country was reported earlier, the situation is not very clear if the transition is still on course or it has stalled as reported by Bongaarts (2008). In fact, fertility trend in the country has been described as quite undulating whereby it was falling at a time and later manifested a rise (Garenne, 2008). What are the factors promoting or stagnating the transition? In view of the apparent consequences of high fertility in the country, the search for satisfactory response to this question demands that more studies examining or re-assessing the fertility landscape in the country are imperative. In this paper, attempt is made to re-assess the contributions of female education and employment to the fertility situation in the country

using nationally representative data sets. This is an important research goal judging against the backgrounds that the relationship between education and fertility in less developed countries has been reported to be largely ambiguous (Lloyd, 1991) and also little is known about the interaction between women labour force participation and fertility trend in such regions (Kravdal and Rindfuss, 2007).

The new home economics and the uncertainty reduction theory of the value of children were among the first to undertake comprehensive theoretical analysis of the relationship between women's education, labour force participation and fertility (Vikat, 2004). Female schooling and labour force participation were among the most significant determinants of demographic processes, especially fertility, that have been reported in the literature (van de Walle and van de Walle, 1995; Beets, 2008; Shapiro and Gebreselassie, 2008). To start with, female education and labour force participation are inter-related factors that have been recognised for a long time to be inversely related to fertility. Exposure of women to western education enables them to delay marriage, reduce family size preferences, possess modern reproductive attitudes and such women tend to have high aspirations for their children that they realize it would be difficult to actualize if they have many children, so they adopt modern contraceptives to limit their family size (Okojie, 1995). Furthermore, it is expected that more educated women would likely possess a high level of autonomy and decision-making power and consequently able to adopt modern contraceptives to space children and limit childbearing. This analysis suggests that high fertility has persisted in developing countries because of limited female literacy in the affected regions. Recent studies in different parts of less developed regions have corroborated this position that female schooling plays more profound negative effect on fertility (Dharmalingam and Morgan,

1996; Kirk and Pillet, 1998; Capo-chichi and Juarez, 2001; Adhikari, 2010; Lutz, Cuaresma and Abbasi-Shavazi, 2010)

Recent evidence has shown that in Nigeria female schooling has improved tremendously over the years. At least the gap between male and female ever enrolment and mean grades completed have narrowed significantly across all age groups, it has even skewed in favour of females in certain areas (Heaton and Forste, 1998; Grant and Behrman, 2010). Yet average number of children per woman is still as high as about six or more in some areas. The question that could be asked is what is the current relationship between education and fertility behaviour in the country? Is education still inversely related to fertility in the country? This question is an important one in view of the fact that recent studies in developed countries are indicating that education is no longer a significant determinant of fertility and that if alternative childcare is available and affordable the expected inverse relationship between female education and fertility is likely to be eroded (Musick et al., 2009; Rindfuss et al., 2010). Hence the present study seeks to employ nationally representative survey data sets to re-examine this hypothesis in Nigeria.

Furthermore, it is a conventional wisdom that female labour force participation is incompatible with childbearing and when this is wide spread, the probability was almost certain that fertility would likely begin to decline (Derose, 2002; Vikat, 2004; Beets, 2008). Employment that does not allow women to combine work with childbearing is considered as a critical factor in promoting fertility decline (McDonal, 2000; Peticara, 2006). For instance, Klasen and Launov (2006) in a study of the determinants of fertility decline in Czech Republic, identified increased education and difficulty in combining employment and childbearing as the most significant driving forces of the rapid fertility decline in that society. However, in some societies, especially in western countries, the incompatibility of female labour force participation

and childbearing has begun to diminish owing to policies that encourage the compatibility of women participation in labour force and childbearing (Hilgeman and Butts, 2009; Vikat, 2004). But in developing countries such as Nigeria, such policies do not exist and may not find justification presently owing to the high fertility regime prevailing.

Efforts have been stepped up to increase female labour force participation. Yet TFR in the country is still as high as 5.7. Two questions may come to mind here, what is the current rate of women labour force participation? Secondly, what is the nature of occupations women are involved in Nigeria? Because the nature of job affects how flexible it is for women to get out for child delivery and rearing purposes and come back afterward have been found to be a significant determinant of the relationship between female labour force participation and fertility (Derose, 2002). In light of these questions this study seeks to analyze the prevailing relationship between increased female labour force participation and fertility in the country?

### **Data and Methods**

Analysis in this study was based on the last two Nigerian Demographic and Health Survey (DHS) data collected in 2003 and 2008. The two data sets were chosen to enable comparison within a five years period. The 2003 data set was collected between March and August of the year while that of 2008 took place between June and October that year (DHS, 2004; 2009). In view of the focus of this study, individual women of reproductive aged data for the two years were used. In 2008 a total of 33,384 women aged 15-49 were successfully interviewed and 7,619 completed interview in 2003. These two data sets were merged into one using the SPSS 15.0. Over all, analysis was based on a nationally representative sample size of 41,003 reproductive aged women in the country.

Six major variables that were derived from the questions answered by the sampled women form the nexus of the analysis here. The independent variables include highest level of education attained, women occupation, work for family/someone else/self and work at home or away. Children ever born and ideal family size were the two indicators of fertility which was the dependent variable the study seeks to explain in terms of the independent variables identified above. All the independent variables were categorical. They were coded dummy variables whereby each category was coded as 'yes' = 1, 'otherwise' = 0. Given that the dependent variables were non-categorical, the Ordinary Least Square (OLS) regression technique was considered the most appropriate in constructing explanatory models. Two OLS models were constructed on children ever born and ideal family size with the aim of the coefficients of each category of the indicators of female education and labour force participation.

## **Result**

Table1 shows the percentage distribution of the respondents across the independent and dependent variables included in the models. The table reveals that there was slight increase in the proportion of women sampled with at least primary schooling (proportion illiterate declined from 41.6% in 2003 to 35.8% in 2008). Though only 5.9% in 2003 and 8.9% in 2008 indicated level of education higher than secondary schooling. In a similar vein the proportion of women not working also declined from 41.7% to 37.3% between 2003 and 2008 but almost half of all the women were self-employed in both survey years even though 32.6% and 36.6% worked away from home in 2003 and 2008 respectively.

Table 1:

Percentage distribution of women by highest education and employment in 2003 and 2008

Characteristics	Percent	
	2003	2008
<b>Highest education</b>		
None	41.6	35.8
Primary	21.4	19.7
Secondary	31.1	35.7
Higher	5.9	8.9
<b>Occupation</b>		
Not working	41.7	37.3
Professional/Teachers/Manag	4.7	4.1
Clerical	1.0	1.2
Sales	32.7	28.9
Agro-allied	12.0	15.2
Household/Domestic	0.8	-
Service/Manual	7.1	12.7
<b>Work for family/someone else/self</b>		
Self employed	43.7	45.2
Work for someone else	7.2	7.9
Work for family members	7.0	9.4
<b>Work at home or away</b>		
Work at home	25.2	25.5
Work away	32.6	36.6

- *not included in the year's survey questionnaire*

As indicated in the previous section, children ever born and ideal number of children were the two indicators of fertility in this study. Table 2 shows the OLS regression coefficients of the selected predictors of children ever born among Nigerian women in 2003 and 2008. All levels of education exhibited a highly significant inverse relationship with children ever born in both 2003 and 2008. The negative coefficients show that a woman with at least primary education is likely to have had fewer numbers of children. In the two data sets secondary education (2003,  $\beta = -0.318$ ; 2008,  $\beta = -0.443$ ) appears to exert the most important influence on women fertility level, followed by higher level of education (2003,  $\beta = -0.196$ , 2008,  $\beta = -0.253$ ). Although almost all

the occupational categories of women were significantly related to children ever born, the relationship was a positive one in both years. This type of relationship indicates that the involvement of women in various types of occupation was likely to increase their fertility. In the 2003 data three categories of jobs that made most significant positive influence on children ever born were sales ( $\beta = 0.263$ ), profession/teacher/managerial ( $\beta = 0.214$ ) and agro-allied ( $\beta = 0.208$ ). On the other hand, in 2008 sales ( $\beta = 0.288$ ) and agro-allied ( $\beta = 0.238$ ) had much more stronger positive influence on children ever born among the sampled women.

Who a woman work for, whether for a family member or someone else exhibited quite inconsistent relationship with children ever born in both 2003 and 2008, even though all were inversely related to children ever born. Working for someone else was significantly related to children ever born in 2003 but not significant at all in 2008 while working for a family member was much more significant in terms of magnitude of impact on children ever born in the country in 2008 ( $\beta = -0.060$ ) than 2003 ( $\beta = -0.043$ ). In similar vein, where a woman work was not an important predictor of children ever born in 2003 but relatively significant and inversely related to children ever born in 2008. Thus working away from home became an important negatively related predictor of children ever born in 2008 among women in the country.

Table 2:

Beta Coefficients of OLS regression analysis of the effects of women education, employment on children ever born in Nigeria, DHS 2003 and 2008

Variables	Beta Coefficients	
	2003	2008
<b>Highest Education</b>		
No education (r)		
Primary education	-0.138**	-0.109**
Secondary education	-0.318**	-0.443**
Higher education	-0.196**	-0.253**
<b>Occupation</b>		
Not working (r)		
Professionals/Teachers/Managerial	0.214**	0.159**
Clerical	0.078**	0.051**
Sales	0.263**	0.288**
Agro-Allied	0.208**	0.238**
Household/Domestic	0.012	-
Service/Manual	0.078**	0.124**
<b>Work for family/someone else/self</b>		
Self employed (r)		
Work for someone else	-0.117**	-0.076
Work for family members	-0.043**	-0.060**
<b>Work at home/away</b>		
Work at home (r)		
Work away	-0.007	-0.023**
Adjusted R <sup>2</sup>	0.247	0.261
F Statistic	208.05**	1066.56**
n	7619	33,384

-not included in model, \* P value <0.05, \*\* P value <0.01

Table 3 is showing the coefficients of the OLS regression analysis of the predictor variables of ideal number of children among sampled women in 2003 and 2008. Apparent in the table is the fact that the three categories of highest educational levels were significant predictors of the ideal number of children in both data sets and the relationship was an inverse one across the three levels. Secondary education was the most important inversely related predictor to the



number of children considered ideal among the sampled women in 2003 ( $\beta = -0.250$ ) and 2008 ( $\beta = -0.241$ ). All the six occupational categories were not significant predictors of ideal number of children in 2003 sample but professionals/teachers/managerial, sales, agro-allied and service/manual were significantly related to the dependent variable in 2008. However, while the other three were positive predictors, agro-allied occupation was inversely related to ideal number of children among the sampled women. Who a woman work for was not a significant predictor in the 2003 sample but significant and positive predictors (work for someone else,  $\beta = 0.025$ ; work for family members,  $\beta = 0.055$ ) of ideal number of children in 2008 sample. Working away from home was a significant inverse predictor of the dependent variable in both data sets (2003,  $\beta = -0.071$ ; 2008,  $\beta = -0.037$ ) but the effect was relatively stronger in 2003 sample than their 2008 counterparts.

Table 3:

Beta Coefficients of OLS regression analysis of the effects of women education, employment on Ideal number of children in Nigeria, DHS 2003 and 2008

Variables	Beta Coefficients	
	2003	2008
<b>Highest Education</b>		
No education (r)		
Primary education	-0.126**	-0.113**
Secondary education	-0.250**	-0.241**
Higher education	-0.148**	-0.174**
<b>Occupation</b>		
Not working (r)		
Professionals/Teachers/Managerial	0.015	0.014*
Clerical	0.015	0.008
Sales	-0.210	0.020*
Agro-Allied	-0.021	-0.066**
Household/Domestic	-0.014	-
Service/Manual	-0.006	0.028**
<b>Work for family/someone else/self</b>		
Self employed (r)		
Work for someone else	0.002	0.025**
Work for family members	0.000	0.055**
<b>Work at home/away</b>		
Work at home (r)		
Work away	-0.071**	-0.037**
Adjusted R <sup>2</sup>	0.07	0.07
F Statistic	46.74**	218.44**
n	7603	33, 295

-not included in model, \* P value <0.05, \*\* P value <0.01

## Discussion

This paper has re-examined the relationship between female education, employment and fertility in Nigeria. This task has been carried out through the lenses of the 2003 and 2008 NDHS data sets. The analysis has revealed that female education was significantly related to children ever

born and ideal number of children, two indicators of fertility adopted. It was inversely related to children ever born and ideal number of children. Inverse relationship indicates that with at least primary schooling, but especially secondary level of schooling, women were most likely to embrace small family size. This relationship is expected because educated women are most likely to live in urban areas with high accessibility to family planning information and facilities. The fact that such women are usually engaged in the formal sector places high demand on their time. In addition, the fact that they have easy access to contraceptives facilitates actualization of small family size goal. These conditions most probably promote small family size culture which predates sustainable fertility decline. In this respect this study corroborates findings of earlier studies indicating inverse relationship between education and fertility in developing countries (Capo-chichi and Juarez, 2001; Adhikari, 2010; Lutz, Cuaresma and Abbasi-Shavazi, 2010).

However, there is a legitimate concern. Female education in the country has soared in terms of enrolment rate and level (Grant and Behrman, 2010), and there is inverse relationship between female education and fertility, why is her TFR still as high as 5.7? The most appropriate explanation for this situation may be as a result of the need for more time to enable widespread of female school enrolment especially in the educationally backwards parts of the country. It is very likely that within a reasonable timeframe, the translation of the inverse relationship into wide spread small family size goal in the society will emerge provided further concerted effort to make quality female education wide-spread in the country is not compromised. Particular emphasis is on the need to address cultural practices that prevent the schooling of the girl child. Such practices include the child marriage syndrome that is still rampant in certain parts of the country. The campaign for universal basic education of the present administration is likely to prepare the foundation for nation-wide sustainable fertility decline in the nearest future.

The relationship between occupational categories and fertility is a surprising one. All significant categories of occupations indicated a positive relationship with children ever born. This is surprising because individuals involved in occupations such as professionals/teachers/managers are generally expected to be educated women and having very busy schedule as a result of their involvement in such occupations which are not easily compatible with large family size. In other words, women in such occupations should possess modern reproductive attitudes and given the high demand on their time, small family size should be their reproductive goal. But the contrary is the case here. Could this picture be similar to the emerging trend in more developed countries where the negative effect of female employment on fertility is declining because of pronatalist policies meant to encourage childbearing in spite of their involvement in formal occupations (Beguy, 2009; Hilgeman and Butts, 2009)?

This situation in Nigeria may be attributed to the fact that even though the country appears to be implementing a passive anti-natalist population policy, the existence of thriving traditional family practices is likely to obliterate the expected inverse relationship between occupation and family size. For instance, the presence of extended family members and older siblings in homes are likely to alter the expected negative impact of women participation in labour force and fertility. The other explanation could be that most of the occupations women participating in labour force in the country engage in are generally flexible in terms of compatibility with reproductive responsibilities. It is thus easier for them to combine childbearing responsibilities with that of such jobs. Sales and trading stand out in this regard. The flexibility of participating in some formal occupations that make provisions for maternity leave to deliver and nurse baby and crèche centres near place of work are very likely to facilitate the possibility for women to combine their occupational responsibilities and the burden of

childbearing and ultimately promote the prevalence of large family size (Derose, 2002; Klasen and Launov, 2006; Peticara, 2006). The case of agro-allied occupations is not surprising. The traditional agricultural practices are labour intensive and such large family size is justifiable. Related jobs may also play out in a similar way. However, the fact that agro-allied occupation is inversely related to ideal number of children deserves a special mention. This may be explained in terms of the gradual decline in traditional agricultural practices that are labour intensive which promoted large family size in the past as a result of gradual emergence of mechanized farming. The inverse relationship with ideal family among sampled women may be suggesting that in the near future small family size goal may become reproductive norm thereby spreading it among both non-agro and agro-allied occupations. This is very likely to pave way for sustainable fertility decline.

Who the employer of a woman is and whether she works at home or away indicated inverse relationship with children ever born inconsistently in the two years. This implies that a woman working for someone else or for a family member is most likely to adopt restrictive family size goals. In a similar vein, the place of employment that is away from home is most likely to result to adoption of small number for children ever born and the number of children considered ideal. Thus employment that takes women from their homes is capable of promoting small family size in the country. Occupations that take women away from home are likely make it difficult to indulge in traditional reproductive practices. Such women are likely to adopt control measures to achieve small family size. This is a dimension that has rarely been reported in the literature.

Finally, on the basis of the two NDHS data sets, the re-assessment of the interconnections of female education, employment and fertility in Nigeria has revealed two main valid

conclusions. First, female education in the country remains inversely related to fertility. Therefore promoting female schooling in all parts of the country is very likely to facilitate more rapid fertility decline and finally lead to the attainment of sustainable fertility decline. Secondly, female labour force participation in the country is likely not to have attained the status to exert any significant inverse effect on fertility. But there is a gradual move towards general acceptance of small ideal number of children. This suggests that reproductive revolution is underway in the Nigerian society. It is therefore imperative to encourage more participation in formal employment among women and probably adopt implicit strategies to make it incompatible for them to engage in employment and having many children. For example, maternity leave may be disallowed if a woman is preparing to deliver more than the second child. This will make it difficult for women in this category to continue bearing children since they would want to retain their employment. Such policy strategy should be built on a more determined drive towards a more massive quality education in the country, especially female education.

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