Timing of first birth and its impact on school attainment among black women in South Africa

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Background

Education as a tool for advancing women's socio-economic status in the developing countries has been emphasised in many studies (World Bank, 1996). In South Africa, improvement of education among black women will go a long way to redress racial and gender imbalances of the past. Results from census data indicate that black women have the lowest educational attainment in the country. However, concerted effort to improve education among this group is likely to be frustrated by relatively higher levels of women who are dropping out of school due to pregnancy related reasons. Studies have indicated that approximately 35 percent of black women has experienced pregnancy during adolescence years (Dickson, 2003), and many young women dropped out of school as a result of falling pregnant in school (Manzini, 2001). In other countries, studies have indicated that pregnancy-related school dropout is major drawback for completion of secondary education among women (Eloundou-Enyegue, 2004)). Although in South Africa, women are allowed to return to school after giving birth, many still find it difficult to do so, given challenges that they encounter after that (Kaufman, 2001). For those who eventually return to school, they normally experience hostile environment from their school mates (Chigona and Chetty, 2008) thus making it difficult to proceed with their education.

Recently, data from different sources has indicated that teenage fertility is decreasing (Moultrie and McGrath, 2007), but the pace of such decline has been slow compared to overall fertility, and the tempo of decline has been interrupted from time to time (Camlin et al. 2004). For example, a study by Moultrie and McGrath (2007) pointed out that teenage fertility has been declining in the rural parts of Kwa-Zulu Natal between 1990 and 2005. However, when one looks at the differences between teenage fertility rate observed in 1990 and 2002 in this study, it become evident that, despite periodical fluctuations between the two dates, fertility rate was 83 per 1000 teenagers both in 1990 and 2002. In other words, although there have been fluctuations between 1990 and 2002, teenage fertility rate had not gone below the rate observed 12 years before. Evidence from the same data indicates that there has been a downward trend 2002 to 2005; however, one cannot say with conviction that the downward trend will be maintained, given the volatility of the past trends.

Undeniably, the current national teenage fertility rate of 65 births in South Africa is low by sub-Saharan standard; however, this level is still high when compared against developed regions of the world. For example, USA, which happens to have the highest rates of adolescent childbearing in the developed countries, had teenage fertility rate of 61 in 1992 (Klein; 2005), meaning that South Africa has still a long way to go before teenage fertility rate can be comparable with rates in the developed world. Furthermore, the national rate indicated above conceals regional and racial differences in teenage fertility. Evidence from different studies indicates that childbearing is relatively higher among black and Coloured adolescents and lowest among Whites and Indians (Zibanda and Zuberi, 2005). For example, the rate observed among the black teenagers was 71 in

2001, far above the rate of 14 observed among the whites population (Moultrie and McGrath, 2007).
Teenage fertility in South Africa occurs within the context of increasing levels of school participation among women (Madhavan and Thomas, 2005). In addition, due to higher levels of grade repetition and late entry into school, many adolescents in the Black community are in school well beyond onset of puberty, (Schindler 2008), and in the process, schooling end up competing against other life events such as childbearing. This is especially the case in a culture where higher value is still attached to childbearing, and many young black women are under pressure to prove their fertility to their prospective husbands, (Preston-Whyte, 1990**.)**

Despite a long history of research on childbearing and schooling (Hofferth 2001), literature review in this area suggest that there is lack of consensus on the way adolescent fertility affect schooling. While some studies indicate that early childbearing is detrimental to schooling (Meekers and Ahmed 1999) including those conducted in South Africa (Madhavan and Thomas 2005), other studies found that school pregnancy does not affect schooling outcomes, and women giving birth in school have similar chances of graduating from school to those who never gave birth (Upchurch and McCarthy, 1990). Furthermore, findings from a study in Kenya suggest that majority of young women who became pregnant do so after dropping out of school (Mensch et al. 2001), implying that most pregnancies do not affect schooling because these women would still not be in school even if they did not fall pregnant. A report on teenage fertility made a reference to studies that suggest that dropout among young women in South Africa precede pregnancy in majority of cases (Dept of Education, 2009). On the other hand, analysis of DHS data in 20 sub-Saharan countries indicated that South Africa had the highest number of pregnancy-related dropouts (Lloyed and Mensch 2006) in sub-Saharan Africa.

Studies dealing with association between adolescent fertility and schooling in developing countries often rely on cross-sectional data such as censuses and surveys. Cross-sectional data are likely to underestimate the impact of pregnancy and other subsequent process that follow from such pregnancy, such as childbirth and motherhood, questionnaires from these datasets often enquire about the current enrolment status of a woman and whether or not a woman is pregnant. However, most pregnancy related dropouts are likely to take place at the beginning of pregnancy before it becomes visible to the public (Chigona and Chetty, 2008). If majority of young women who drop for pregnancy related reasons do so at the beginning of pregnancy, it means most pregnant women would be out of school during a greater part of their pregnancy, and therefore, the likelihood of finding a pregnant women who is not attending school would be high. It is therefore, possible that majority of young women who dropped due to pregnancy would be assumed to have dropped out before they were pregnant. This assumption is often made without establishing the date of dropout and whether or not it coincided with such pregnancy. In addition, there are no indications on how those that are currently pregnant likely to be affected in future. In addition, pregnancy-related drop out can occur during pregnancy and even long after birth has occurred. For example, some women would not drop during pregnancy, but would drop after birth due to problems related to child care (Kauffman,

2001), or in some cases, drop out would occur because resources in the household are fixed, and cannot cater for additional member (through birth). It is therefore, not possible, to understand the total picture of how these variables are related by focussing our attention in a single period. We need to focus our attention in all months of pregnancy, and in periods beyond pregnancy to have a total picture of how pregnancy/births affect schooling.

The general purpose of this study was to add to the debate on learner pregnancy and school outcomes, focusing on school dropout and graduation from high school within the context of South Africa. The study would achieve the above objective by firstly determining the proportion of pregnancies to first births which occurred while respondents were still enrolled in school, and subsequent rate of school dropout from these women. Dropout rate would be established from the first month of pregnancy to the date of birth, and beyond. By doing this, that study assumed, it would avoid a pitfall of excluding women who might have dropped from school in the first months of pregnancy when dealing with analysis of dropout. Secondly, the study would estimate school survival functions between two groups of women; those that have had first birth and pregnancies to first birth occurred while they were still enrolled in school, and those that pregnancy to such birth occurred after leaving school. The purpose for this is to establish whether or not there would be statistical differences between these groups in terms of proportion surviving in school until graduation. This is necessary to determine whether school pregnancy is detrimental to high school attainment. Thirdly, using Cox regression method, to establish how age at first birth affects the hazard of leaving school in any grade before graduating in grade 12, while controlling for other background factors.

Data and Methods

This survey was conducted in 2009 the province of North-West, which is one of the nine provinces in South Africa. The province shares border with Botswana and majority of the people speak Setswana, which is an official language in Botswana. The province's population was estimated at 3, 4 million in 2007 and racial composition is mainly blacks (90%), followed by Whites (7) percent while Coloureds and Asians contributed the remaining percents. Slightly more than half (51%) of the population are women and more than 60 percent of the population is residing in the rural area.

A stratified, multi-stage cluster sampling was used to choose the sample in the study. Firstly, two districts, Bojanala and Central were randomly selected from the total of four districts in the province. The selected districts were stratified according to municipalities and then enumeration areas (EAs) used by Statistics South Africa in 2001 census. Within selected EAs, 600 households were selected, and from each household, one women of relevant ages was chosen for interviews

The study targeted black women between the ages of 22 and 40 who were residing in the Province. The rationale for choosing women at these ages is simply because most are already out of school at this ages and it one can have a total picture of how their schooling has been affected in the past. For example, analysis of general household

survey conducted in 2008 showed that less than of women was still in school at age 22 (Dept of Education, 2010). The sample is restricted to individuals who were enrolled in school at the age of 14, and had not given birth at the beginning of this age. Of the 600 that were targeted, 582 (97%) were interviewed using semi-structured questionnaires.

Many traditional sources of data such as census present a cross-sectional data which measures variables of interest at a particular point in time, and do not what provide us with background information in the past. This often makes it difficult to determine causality between the dependent variable and these factors. To overcome that inadequacy, this study used event history to obtain retrospective information at childhood, that is, when she was 14. Respondents were asked to provide background information on factors such as mother's education, place of residence, number of siblings, household composition and headship and the level of education (grade enrolled for). Information on key aspects of schooling such as school dropout from age 14, if any, and dates of such dropout, highest school grade attained and the year in which the grade was passed. In cases, where the respondent had attained higher than high school education, the date on which she graduated from high school was requested. Furthermore, the study probed information on age at first sex, date of first birth for those who have started childbearing.

Kaplan-Meier model was used to estimate the proportion dropping out in each month after first month of pregnancy. In addition, Cox proportional hazards model was use to estimate the effect of age at first birth and other background factors on the hazard of dropping out of school and failing to complete high school.

Background Characteristics of respondents

Table 1: % distribution of respondents by socioeconomic characteristics

	Variable	Freq	(%)	Cum(%)
Age groups	**22-25**	178	30.64	30.64
	26-29	152	26.16	56.8
	30-33	116	19.96	76.76
	34-37	81	13.94	90.7
	38-40	55	9.3	100
Education	**6**	6	1.03	1.03
	7	23	3.95	4.98
(Grades attained)	**8**	25	4.30	9.28
	9	52	8.93	18.21
	10	68	11.68	29.30
	11	90	15.29	45.36
	12	244	42.10	87.29
	p/matric	74	12.71	100
Residence	Rural	329	56.53	
	Urban	253	43.47	
	TOTAL	**582**	**100**	

Age at first birth	**14-17**	55	11.55	11.55
	18-19	117	24.58	36.13
	20-21	124	26.06	62.19
	22-23	82	17.22	79.41
	24-25	42	8.82	88.23
	26-27	32	6.72	94.95
	28+	24	5.04	100
	Total	**476**	**100**	**100**
Preg. status	**In-sch**	225	47.2	
	After	251	52.8	

Table 1 shows distribution of age of respondents by background characteristics. 30 percent of respondents were in age 22-25 and relatively fewer respondents (9.2%) were in age 38-40. This distribution is a reflection of the fact that people in relatively older ages are less likely to have been in school whereas higher proportion of younger women are increasingly enrolled. On the other hand, close to 55 percent of the respondents had attained a minimum of grade 12. There were 476 respondents who had given birth, and 36 percent were under the age of 20 at time of first birth. Less than half of respondents (47%) who gave birth, got pregnant while still in school, and the rest did so after leaving school, irrespective of whether it was through dropout or graduation.

Results

The purpose of this section is to look at the proportion of women of women whose pregnancy to first birth occurred while they were enrolled in school among those who had given birth. The study did not ask question pertaining to the timing of first pregnancy for the mere reason that some people would not know the date in which they fell pregnant, or even if they know, they would not remember such date. The respondents were, however, asked about the date on which they gave first birth; this was then used to estimate the date on which the respondent fell pregnant. Under normal circumstances, the first month of pregnancy occurs nine months before the occurrence of birth, and this was assumed to be the case. In order to establish whether pregnancy preceded school dropout or not, the date of dropout was compared against the date in which the respondent was estimated to have fallen pregnant. Dropouts that occurred before the first month in which a woman was assumed to be pregnant were classified as pre-dropout pregnancies and other way around. It should be noted that, only pregnancies that resulted in first birth were considered in this study, and those pregnancies that were aborted or miscarried were not included in the analysis.

Percentage of women in school during pregnancy by age at first birth

In order to understand the differences between those women whose pregnancy commenced in school and those who were not in school at the beginning of pregnancy, one needs to look at the distribution of age at first birth in both groups and the likelihood of women who gave birth at a particular age being in school at the beginning of first pregnancy. .Of the 476 women in the study who had given birth, 47 percent became pregnant while enrolled in school (in-school), while the rest postponed it to later periods

(post-school). Among the school-pregnancy group, 60 percent of respondents were under the age of 20 at time of first birth, compared to only 15 percent among those who postponed pregnancy to post-school periods. On the other hand, while 48 percent of women who postponed pregnancy to ages above 22, only 8 percent of the school pregnancy group gave birth at these ages.

Figure 1: % in school by age at first birth

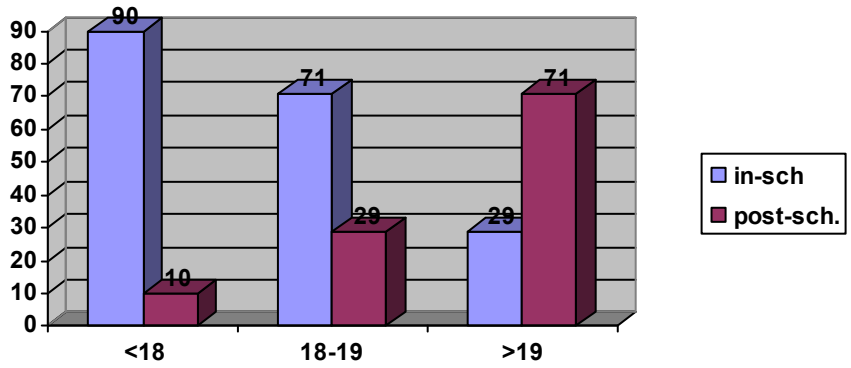
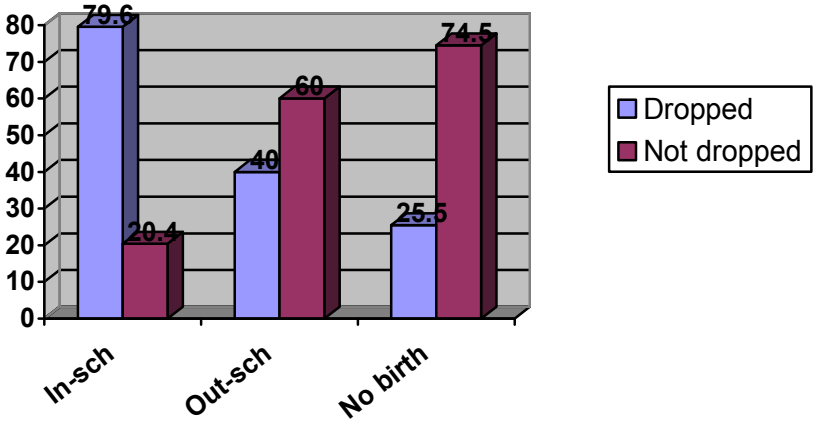


Figure 1 above shows the percentage of women who were in school by age at first birth among those in school pregnant women and those who got pregnant after leaving school. There is negative correlation between age at first birth and being enrolled in school at the onset of pregnancy. Close to 90 percent of women who gave birth at ages below were in school at the beginning of pregnancy while the 71 and 29 were in school among those who gave birth in ages 18-19 and above 19 respectively. This suggests that, women who gave birth at younger ages were more likely to be in school at a time of pregnancy, while postponing birth to advanced ages meant that pregnancy of that birth would commence outside school.

Figure 2: % of dropouts by whether pregnancy was in school in not, and those who had not given birth



Of the 476 respondents who had given first birth, 47 percent were enrolled in school at the beginning of pregnancy while the rest had their pregnancy after they have left school. Figure 2 compares dropout rates between these groups; however, dropouts among those who had not given birth (*no birth*) were also included for the purpose of comparison. The results point out that the highest number of school dropout (79, 6%) was among the in-school pregnancy group, however, this rate was reduced by almost half (40%)for those who postponed pregnancy for later period, (*out-sch*). The lowest rate occurred among those who had not given birth, with only 25 percent of women dropping out of school in this category.

Does school dropout precede pregnancy?

Given questions raised in other studies pertaining to the sequence in which pregnancy and school dropout follow each other (Mensch 2008), there is a need to get empirical evidence based in South Africa. The purpose of this section is to establish the proportion of dropouts who were pregnant at time of dropout. To achieve this goal, total number of school dropouts was compared according to the ages at first birth, and whether or not a woman was pregnant (or might have given birth) at a time when she dropped from school.

Table 2 shows the distribution of total dropouts by whether or not a person had given birth in school, indicated as (no-birth), and the age of a person at first birth among those who had started childbearing.

In total, there were 306 respondents who had dropped out of school at some point, irrespective of whether such dropout was preceded by pregnancy or not. This number includes those who returned to school later. Table 2 shows the number of women who had given birth according to the age of woman at first birth, and the next column

indicates the total number of dropping out in each age category. The last column shows the proportion of total dropouts in pregnancy preceded school dropout.

Table 2: Dropout by age at first of birth

Age at first birth	No. of births	Total no. of Drop outs	Proportion of total among those who were pregnant	
			No	%
14-17	55	52	47	(90.4%)
18-19	117	90	68	(75.5)
20-21	124	68	45	(66.2)
22 and above	180	69	18	(26)
No birth	106	27	-	-
Total	**582**	**306**	**178**	**(58.5)**

The results indicate that the number dropping out of school was high among those who gave birth at younger ages, but the rate of dropout decreased as age at first birth increased. For example, among 55 women who gave birth in age 14-17, significant majority 52 dropped out of school, meaning that only 5 % of this group was not affected by dropout. On the other hand, 68 (75%) and 54 percent dropped out in ages 18-19 and 20-21 respectively, and only 38 percent of those who gave birth in ages above 21 dropping out. Compared to those who had yet to give birth, there were only 25 percent of respondents dropping out.

Although some women dropped from school and became pregnant and a later stage, the results in the last column of Table 2 indicate that majority of dropouts (58%) were preceded by pregnancy. Furthermore, women who gave birth at younger ages were more likely to fall pregnant and drop out than those who gave birth at later ages. Whereas only 26 percent of women who gave birth in ages above 21 got pregnant before dropping out, significant majority (90%) of those who gave birth in ages between 14 and 17 were pregnant prior to dropping out. However, these percentages declined in ages 18-19 and 20-21, to 76 and 66 percent respectively.

The evidence here suggests that, the likelihood of pregnancy preceding school dropout was relatively higher for those who gave birth at younger ages. In addition, women who got pregnant in school were more likely to drop out, however, the rate of dropout decreased with an increase in age of respondent at first birth. This results compares very well with findings from Hallman

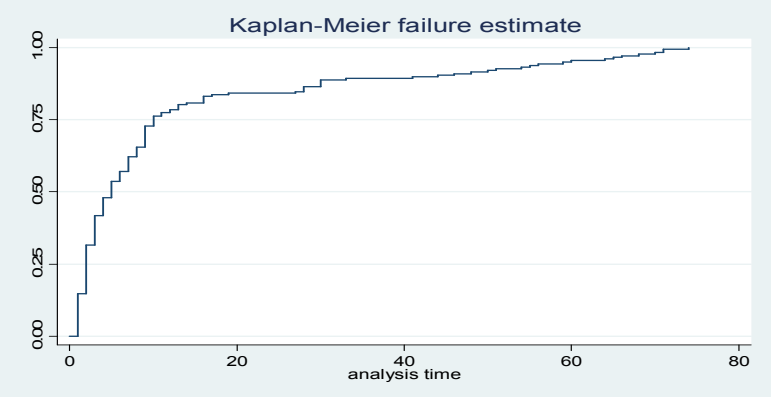
School survival function for those who got pregnant in school

As indicated in the previous section among those who became pregnant in school, majority 79 percent dropped out of school after falling pregnant. It is not clear, at what

point during pregnancy and in post birth period, are majority of women likely to drop out of school. It is possible that most women who drop out are likely to do so before pregnancy become conspicuous, or the first months of pregnancy. Studies have shown that, parents are likely to avoid being embarrassed in the community by forcing pregnant daughter to drop before the pregnancy become clear to everyone (Chigona and Chetty, 2008). On the other hand, school mates are likely to convey their discomfort to the pregnancy in both verbal and non-verbal means. The purpose of this section is to highlight, the number of months, from the first month of pregnancy to the time in which a woman drops out of school. The sample is therefore, restricted to women who became pregnant and dropped from school thereafter. Analysis of survivor function included periods of pregnancy, childbirth and motherhood, which encompasses a period after birth. The rational for this exercise is to identify periods of childbirth in which a women experience the highest risk of dropping out, in order to inform intervention strategies.

Figure 3 presents the results of Kaplan-Meier estimates showing proportion surviving from first month of pregnancy to the last month in which a woman was enrolled in school. The median survival time was five months, implying that half of the respondents dropped out before the fifth month. However, some women persisted in school and dropped out some months after giving birth, hence the survival period goes beyond nine months of pregnancy.

Figure 3: Estimation of school survivor function among those whose pregnancy to first birth occurred in school



The results in suggest that majority of these women dropped out in the beginning of second trimester of the pregnancy, with the median survival times being five months. At the end of ninth month, supposedly the time in which a woman gave birth, only 27 percent of the original cohorts were still enrolled in school, (confidence interval ranges from 20.8- 33.8) and by 13th month, more than 80 percent had already dropped out of school. Hazard estimate suggest that, the hazard from dropping out increases with every additional month from first, up until ninth month, and decreases slightly from there, but increases again at times beyond 33 months. Counting from the first month of pregnancy,

a child would be two years of age after 33 months, and this suggest that, among women who are still in school after birth, the likelihood of dropping out increases with the age of child after the first year.

The evidence from the figure above suggest women who fell pregnant in school and dropped out, were likely to do so in the first five months of their pregnancy, and 63 percent had dropped out at time of birth. Although school policy in South Africa suggest that a woman cannot be denied education because of pregnancy, it spells out clearly that learners who are pregnant should have some time out of school, and such learner cannot return to school in the same year that she gave birth.

Proportion surviving in school until graduation

Although majority of women who became pregnant in school dropped out, 44 percent of those who dropped out returned to school some time later, compared to 6 percent of those who became pregnant after leaving school. We are aware that school pregnancy impacted schooling negatively thorough increased dropout rate, but, given the fact that some women returned to school, it is not clear whether school attainment was also affected, and if so, to what an extent. The purpose of this section, therefore, is to compare the survivor function of these two groups, that is, the proportion surviving from each successive school grade until graduation, or attainment of grade 12.
To estimate the proportion surviving from one grade to the other, Kaplan-Meier estimation was used, and the results are presented in Table 3.

Given that only small proportion of women who fell pregnant in school survived to the end of grade 12, it would be interesting to know how their school survivor function compares to women who postponed pregnancy of their first birth to post school period.

Figure 4. Kaplan Meier estimates of survival function for those got pregnant in school and those who postponed it

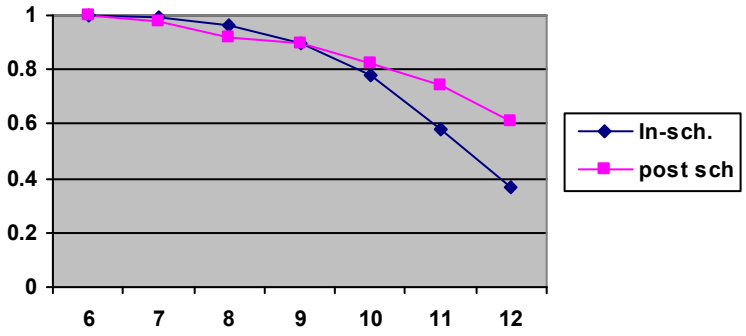


Figure 1 compares survival function of two groups of women; those women who got pregnant in school and those who postponed pregnancy of their first birth to period after

school. Almost all women in both groups were in school at the end of grade 6, (more than 97%) and 90 in both groups survived to the beginning of grade 9. However, the two curves started to diverge around grade 10; the proportion enrolled in school declined at a higher rate among those who got pregnant in school than their counterpart. Whereas 74 percent of those who postponed pregnancy were still enrolled in grade 11, only 58 percent of the other group were in school. Moreover, only 37, 3 of those who became pregnant in school graduated from high school, or reached the end of grade 12 against 61,3 of those who postponed pregnancy. Both log-rank and wilcoxon tests indicated that the two survival curves were significantly different ($p<0.001$).

Figure 5: Smooth hazard estimate for women in school and non-school pregnancy group

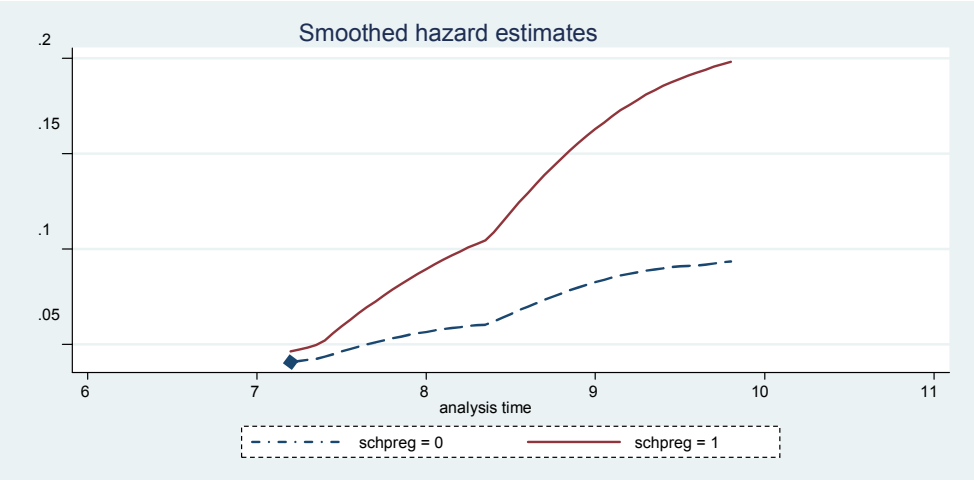


Figure 3 show that the hazard estimates for *schpreg,* a dummy variable indicating whether or not a woman became pregnant in school. Hazard is defined as a probability that an individual will experience an event of dropout at a particular grade. Hazard rate represent unobserved rate at which the event of dropout occur in different groups represented in figure 5. The results point out that the hazard rate was below 0.5 for both groups at around grade 7, but it increased with each additional grade for both groups. However, the hazard rate for those who were pregnant in school was higher at every point in the survival times and increasing at a higher rate compared to the rate the other group. The differences were so profound that, by the end of the survival period, the rate for *schpreg1* was almost double the rate of women who had postponed pregnancy. In short, we can conclude that women who had pregnancy in school were more likely to dropout compared to women who did not, and the hazard for dropping were higher at higher grades.

Factors influencing the hazard of dropping out

The previous section indicated that those who fell pregnant in school are more likely to drop out of school and lower proportion graduate in high school compared to those who postpone pregnancy. It is thus important to identify those factors that facilitate the probability of dropping out of school at any grade. Given that majority of dropping out are those who gave birth at a relatively younger age, age at first birth was suspected for the increased hazard of dropping out.

The purpose of this section, therefore, was to estimate impact of age at first birth on the hazard of dropping out at any grade before attainment of grade 12, while controlling for the effect of other background variables. Cox proportional hazard model was used for this purpose because of its ability to handle time-varying variables.

Variables in the model

The model is table 3 included different variables which, according to literature review, could affect the hazard of dropping out of school. Different studies have indicated that age at sexual debut has negative effect on schooling (Suh et al. 2007) while an increase in number of siblings dilute household resources and thus negatively affect school attendance (Upchurch and McCarthy, 1990). Other studies have suggested that temporary withdrawals and repetition at lower grades influence the probability of dropping out at later grades (Grant and Hallman 2008), however, since information on the latter variables was not collected in the study, grade enrolled for at age 14 was used as a proxy for earlier repetition and withdrawals.

Results

In the baseline model, the hazard of age at first birth was estimated without controlling for other background variables. A dummy variable was created for age at first birth represented by age groups 14-17 (reference category), 18-19 and 20 and above. In the first model, dummy variables for age at first birth was tested without control variables, whereas in subsequent models other background variables were included for control purpose. The results of these models are presented on table 3.

Table 3: Estimates of hazard ratios for age at first birth, controlling for background variables

	Model 1	Model 2	Model 3
Variables			
Age at first birth			
<18	1.00	1.00	1.00
18-19	.57**	.77	.99
20	.52***	.70	1.05
Sexual debut	-		
<16		1.00	1.00
16		.44***	.49*
17		.50*	.55*

18		.50**	.54*
Grade got pregnant			
>10			1.00
10			.73
11			.43***
12			.11***
Background factors at age 14			
Urban			.84
Staying with mother			.85
Grade enrolled in			.95
Siblings<5			.64*
Log likelihood	-718.4	-707.1	-619.6
LR chi2	9.3	19.3	68.9
Prob>chi2	0.009	0.001	0.000

In model1, age at first birth was introduced without control variables. The results indicate that women who postponed birth to ages 18-19 and above 19 were 43 and 48 percent less likely to leave school before graduation compared to those who gave birth at ages below 18. In model 2, age at sexual debut was introduced as control variable. The introduction of this variable reduced the hazard for age at first birth and it also became insignificant. This suggests that suggest that age at first birth was only operating through the age at which sexual activity began. Women who initiated sex at younger ages were also likely to give birth at younger ages; hence the effect of age at first sex is reflected in the age of first birth.

The hazard ratio for those who engaged in sex before age 16 was compared to those who postponed sexual activity to ages 16 and above. Compared to women who initiated sexual activity at ages below 16, women who had sexual debut at age 16 were 56 percent less likely to leave school before graduation and the results were highly significant ($p<0.005$). Furthermore, those who postponed sexual activity to ages 17 and 18 and above had a hazard reduced by half for both cases, however, in this case, results were moderately significant ($p<0.05$).

Model 3 introduced background variables of which, all but one were representing circumstances under which a respondent lived during childhood (when respondent was 14 years of age). The variables were as follows; having less than five siblings, being enrolled in grade eight or more, staying in an urban area, staying with mother alone, and the last variable, grade in which respondent was enrolled when she fell pregnant, is reflective of background at a later stage. The results in the model shows that the age at first birth remains insignificant while the hazard for age at sexual debut decreased, but remained significant. Other variables in the model had had a dissimilar effect on the dependent variables. Although staying with mother, residing in urban area and being enrolled in grade 8 or more at age 14 reduced the hazard for leaving school, none of the variables were significant. On the other hand, having less than five siblings reduced the hazard by 36 percent ($p<0.05$) compared to someone who had more than four siblings at age 14. On the other hand, grade enrolled for at the commencement of pregnancy was significantly related to the probability of dropping out and not graduating ($p<0.005$). Compared to women who were enrolled in grades below grade 10, women who were enrolled in grade 10, grade 11 and 12 had their hazard rate reduced by 27, 57 and 89 percent respectively. With exception of grade 10, all grades were statistically significant ($p<0.005$).

Discussion

The purpose of this paper was to determine the effect of timing of age at first birth on women's school dropout and high school graduation. Dropout rate was measured from the first month in which the respondent was pregnant with the first child to the last month in which she was enrolled in school. Given that some respondents who dropped out went back to school some time later, it became clear that drop out alone was not sufficient to explain the extent to schooling was affected, and it was necessary to establish also whether, and to what an extend was graduation rate affected by the timing of first birth. The second section in the study, therefore, compared school survival functions of women who were in school at the onset of pregnancy and those who were already out of school. The purpose of this section was to establish the proportion of respondents who persisted in school until graduation. The last section used Cox proportional hazard model to estimate the effect of age at first birth on the hazard of not graduating from high school while controlling for different background variables.

Results indicate that a total of 306 women who were in school at the age of 14 dropped from school. Results indicated that there was a significant difference ($p<0.001$) in terms of school dropout among those who were pregnant in school and those who became pregnant later. Close to 80 percent of those who became pregnant in school dropped out some time later after falling pregnant, while only 40 and 25 percent dropped out respectively among women who postponed pregnancy and those who had yet to give birth, implying that women who became pregnant in school were more at risk of dropping out than the other groups. Furthermore, there is an indication that pregnancy preceded school dropout in majority of cases; 58 percent of women who dropped from school were those who became pregnant in school. In other words, women who became pregnant in school were more likely to drop out later compared to those who did not fall pregnant in school and they were also less likely to graduate from high school. However, it is not clear whether such pregnancy was the main reason for leaving school, or it was just a coincidence that women who became pregnant in school were also at an increased risk of dropping out.

In order to further understand factors affecting the probability that an individual would not graduate from high school, Cox proportional hazard model was used to estimate the effect of different factors on the hazard of leaving school before graduation. Given that majority (60%) of women who fell pregnant in school gave birth at ages below 20, the effect of age at first birth was estimated controlling for different background variables. Without control variables, age at first birth was significantly related to the hazard of leaving school before graduation. Women who gave birth at ages 18 and above were less likely to drop out compared to those who gave birth at ages below 18. However, when age at sexual debut was introduced in the second model, the hazard for age at first birth was reduced and the variable became insignificant. On the other hand, age at which individual initiated sex remained highly significant. This was interpreted as implying that age at first birth was only operating through the age at which sexual activity began. This is consistent with findings from other studies which suggested that girls who initiate

sexual intercourse before the age of 15 are more likely to quit school than those who postpone sexual activity for later period (Suh et al., 2007). Women who engage in sexual activity at younger age are also more likely to fall pregnant at earlier stage, the reason being that sex at earlier age is less likely to involve contraception, (Manzini 2001; Nfono, 1998). This finding, therefore, suggest that school dropout and giving birth at younger ages are both influenced by age at sexual debut. However, although school pregnancy may not have been the main reason for dropping out, it is also possible that, once a woman becomes pregnant in school, such pregnancy would exacerbate her situation.

Results also suggest that having less than five siblings reduced the hazard of dropping out and not graduating. An additional child in the household which had already more children is likely to put pressure on household resources, thus increasing the likelihood of dropping out. This support the hypothesis that household resources are more likely to become 'thin' when there is an additional child in the household. Furthermore, the results indicated that women who were enrolled at grades above grade 10 at a time of falling pregnant were less likely to dropout compared to those who were enrolled in lower grades.

Childhood factors such as staying with mother, residing in an urban area and being enrolled at higher grade were not statistically significant, although the hazards were in expected direction.

In conclusion, the findings in the study indicated that women who became pregnant in school are more likely to drop and less likely to graduate from school compared to those who postpone pregnancy. Also, these findings did not support suggestion that women who give birth at younger ages do so after dropping out of school. Age at first birth was not an important factor for school graduation, but age at sexual debut was. It is possible that age at first sexual intercourse affected both age at first birth and school drop out.

Recommendation

There is a need to identify certain behavioural factors that are likely to predispose young women to both school dropout and early pregnancy. Policy makers should promote programs that would encourage young women to postponed sexual activity to older ages, or to periods after leaving school. Such programs should be target young women before they reach stage of puberty.

References

1. Chigona A., Chetty R. Teen mothers and schooling: lacunae and challenges. South Africa Journal of Education. Vol.28 no.2 Pretoria May 2008

2. Zulu, E. M., Sibanda A. Racial Differences in Household Structure. In The Demography of South Africa. Edited by Tukufu Zuberi, Amson Sibanda and Eric Udjo. 2005. Statistics South Africa. M.E. Sharpe. Armonk, New York.

3. Meekers, D. and Ahmed G. (1999) *Pregnancy related school dropout in Botswana*. Population Studies, Vol.53, No. 2 (July 1999), 195-209

4. Bradburn, E.; Moen P.; Dempster-McClain. *Women's Return to School Following the Transition to Motherhood. Social Forces*, Vol.73, No.4 (Jun., 1995) pp1517-1551

5. Suh S., Suh J., Houston, I. Predictors of Categorical at Risk High School Dropouts. Journal of Counseling & Development. Spring 2007. Volume 85.

6. Mensch B S. Clark W. Lloyd C. Erulkar A. The Effects of School Quality on School Dropout among Kenyan Girls and Boys. Comparative Educational Review, Vol.44, no:2 (May 2000), p133-147

7. Presto-Whyte (1990) Qualitative Perspective on Fertility Trends Among African Teenagers. A Chapter in 'South Africa's Demographic Future . Edited by Mostert WP and Lotter JM. Human Science Research Council.

8. Upchurch DM, McCarthy J. The timing of first birth and high school completion. American Sociological (1990) Upchurch D.M and McCarthy. *Adolescent Childbearing and High School Completion in the 1980s. Have Things changed?* Family Planning Perspectives, Vol. 21, No.5 (Sep-Oct., 1989) pp199-209.

9. Manzini, N. Sexual Initiation and Childbearing among Adolescent Girls in KwaZulu Natal, South Africa. Reproductive Health Matters, Vol.9, No. 17, By and for Young Women and Men, (May, 2001), pp 44-52

10. Marteleto L., Lam D., Ranchhod V. Sexual Behaviour, Pregnancy, and Schooling among Young People in Urban South Africa. Studies in Family Planning, December 2008, 39(4) 351-368

11. Lloyd C., Mensch B.S. Marriage and Childbirth as Factors in School Exit: An Analysis of DHS Data from sub- Saharan Africa. Population Council. Working Paper No 219. 2006

12. Kaufman. Thea de Wet, and Stadler J.. *Adolescent pregnancy and parenthood in SA*. Studies in Family Planning. Vol. 32, No.2 (Jun. 2001) pp147-160

13. Eloundou-Enegue, P.M. Pregnancy-Related Dropouts and Gender Inequality in Education.: A Life-Table Approach And Application to Cameroon. Demography, Vol. 41, No.3. (Aug., 2004), pp.509-528.

14. Hofferth, S.L., Reid, L. and Mott, F.L. *The effects of early childbearing on school over time. Family Planning Perspectives,* Vol. 33, N0. 6 (Nov-Dec, 2001) 259-267.

15. Dickson K.E. Adolescent Fertility: A Population Concern Published In "Fertility: Current South African Issues of Poverty, HIV/AIDS & Youth: Seminar Proceedings. Human Sciences Research Council, l Child, Youth and Family Development Research Programme, Published by HSRC Press, 2003

16. Dept. of Education. Measures for the Prevention and Management of Learner Pregnancy. Choose to wait for a brighter future. 2007. (http://www.education.gov.za) accessed on June 8, 2011

17. Grant M., and Hallman K. Pregnancy-Related School Dropout and Prior School Performance in KwaZulu-Natal, South Africa. Studies in Family Planning, Vol.39, N0.4, Adolescent Sexual and Reproductive Health.

18. Klein J., Adolescent Pregnancy: Current Trends and Issues. Paediatrics 2005; 116; 281