Exploring the relationship between non-marital childbearing and entry into conjugal unions among South African women: Competing alternatives?

Nompumelelo Nzimande
University of KwaZulu-Natal
nzimanden@ukzn.ac.za

Background

Changes in patterns of family formation have been observed in Sub-Saharan Africa. These changes include increases in rates of cohabitation, divorce and childbearing outside of marriage. Prevalence of non-marital childbearing ranges from very low levels of 0.6% in Ethiopia to 58% in South Africa. The average prevalence in Sub-Saharan Africa is 16% (Garenne and Zwang, 2003). Studies document that continuous increase in childbearing outside of unions may be due to observed postponement of entry into marital unions (Gage-Brandon and Meekers, 1993; Meekers, 1994). Other contributing factors include high levels of urbanization in developing countries, which come with weakening social systems and more relaxed sexual behavior, leading to changes in the conventional relationship between marriage and fertility (Preston-Whyte, 1994). Also, women are increasingly investing more time into formal education and the labour force, which result in delayed marriage and increases exposure to premarital childbearing (Kaufman and Stravrou, 2002). Decades of studies that focus on non-marital and premarital childbearing in Sub-Saharan Africa has provided valuable information on the possible factors influencing non-marital fertility, but all have lamented on the difficulty of understanding the full effects of these processes given the complexity surrounding family formation in the region. In South Africa, for instance, family formation and partnership patterns have undergone rapid transformation in recent years. The three previous decades have seen reduction in marriage rates (Udjo, 2000), rising prevalence of divorce and increases in cohabitation (Mturi *et al*, 2003) and higher prevalence of childbearing occurring outside of wedlock (Chemere-Dan, 1998).

Recent studies have hypothesized that there is a relationship between non-marital fertility and delayed entry into conjugal unions. This study explores this relationship by investigating whether women in different population groups in South Africa have varying risks of non-marital childbearing compared to that of entry into conjugal unions; whether having a non-marital first birth results in an increased risk of entry into a union as opposed to progressing to a second non-marital birth; and whether these patterns of family formation vary by place of childhood residence and socioeconomic status.

Non-marital childbearing and union formation

Demographic factors that increase the likelihood that fertility will occur outside marital unions are a combination of younger age at menarche; early age of sexual debut and delayed age at marriage. These factors increase period of exposure to non-marital sexual activity and thus higher risk of non-marital pregnancy, particularly for younger women. For women in the middle of their reproductive lives, lower marriage and remarriage rates are risk factors for exposure to non-marital conceptions. There is evidence that these demographic factors are changing towards a direction that elevate exposure to risk of non-marital childbirth. Age at menarche has decreased to 12 years in developed countries, and it is expected that developing countries will have a similar trend (Bongaarts and Cohen, 1998). These factors have been observed in Sub-Saharan Africa and their effect on non-marital childbearing explored (Garenne et al, 2000).

Reports suggest that there are small differences between marital and non-marital fertility in South Africa, and that large differentials exist between population groups and rural/urban residence. The 1993 Living Standard Survey found that over 50% never married African women in child bearing

ages reported to have at least one child (Chimere-Dan, 1997). Furthermore, TFR in the same survey was 3.4 for never married women and 3.8 for married women in 1993 (Chimere-Dan, 1998). This indicates that never married women are having almost as much fertility as married women. The analysis of 1996 population census confirmed this finding for recent periods. Furthermore, the Demographic Surveillance System in Agincourt elaborates that age specific fertility rates depict a pattern of premarital childbearing that is highest among teenage girls, and that it exceeds marital fertility between age 20 and 24.

Understanding difference in fertility differentials by marital status of the woman is important in unpacking patterns of childbearing in South Africa. For instance, and analysis of census 1996 by Udjo (2000) disentangled non-marital fertility for cohabiting women and those who were single. When cohabitation was taken into account, the difference between marital and non-marital fertility was reduced from 29% to 9%, which gave evidence that a good portion of the non-marital childbearing occurs within cohabiting unions. Being unresponsive to this may lead to over-estimates of non-marital childbearing in the population if women in cohabiting unions are different from single women.

Methods

This study estimate survivorship probabilities of non-marital childbearing by population group, and compute competing hazard ratios of non-marital childbearing and union entry taking into account differences in socioeconomic status and place of childhood residence. This study examines the timing of birth and union entry retrospectively, which introduces problems of selectivity and right censoring. To overcome this problem survival models make assumption that censored individuals will eventually experience the event at some future time, and assumes that risks of experiencing the event randomly occurs at the mid point of the interval. The technique selected for analyzing risk of non-marital childbearing is the Cox Proportional Hazard Model for estimating failure time. This model was appealing for this study since it has the ability to model failure time taking into account other covariates. The expected hazard of failing for the i^{th} person is represented as:

$$h_i(t) = h_0(t) \exp(\beta' x)$$

Where $h_0(t)$ is the baseline hazard function and are covariates and $\beta' x$ are regression parameters. The ratio of the hazards are then presented as:

$$h_i(t)/h_0(t) = \exp(\beta'(x_i - x_j))$$

This indicates the ratio of a fixed proportion across time. Hazard ratios will be presented for better interpretation of the effects of the covariates on survival time.

The model uses maximum partial likelihood method to estimate parameters. Partial likelihood is based on the assumption that the interval between successive duration times contributes no information regarding the relationship between covariates and the hazard rate. This is the case for this model because the baseline hazard function is not parameterized. As such, ties (simultaneously occurring failure times) are not accounted for in a partial likelihood. The Breslow (1974) method was used to account for ties. This method approximates the partial likelihood function by assuming that the tied failure times occur sequentially from a risk set consisting of all cases at risk at the failure time. Since failure time is defined in months (explained below), there is no clustering of events time, the Breslow approximation is adequate (Collett, 1994).

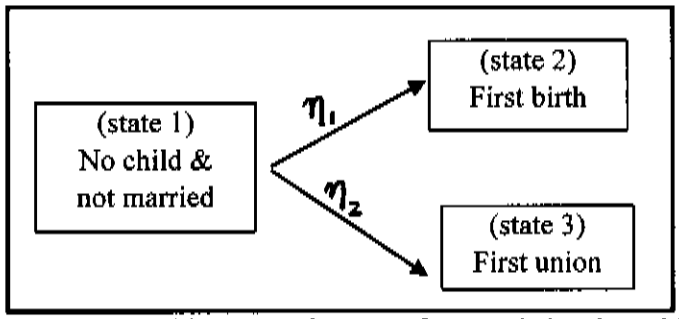

Figure A: Transitions out of a state of unmarried and no child

Since the risk of having a non-marital birth and that of entry into a union are competing, these are modeled as presented in figure A. All women start in a state of no child and not married (state 1). The hazard model of having a non-marital first birth (state2) is η_1, for this model. Women who either did not exit state 1, or transitioned to a union without having a birth are censored. Therefore, these two models have two separate equations describing the hazard. Model η_2 estimates hazards of transitioning to state 3.

Figure B: Transitions after having a non-marital first birth

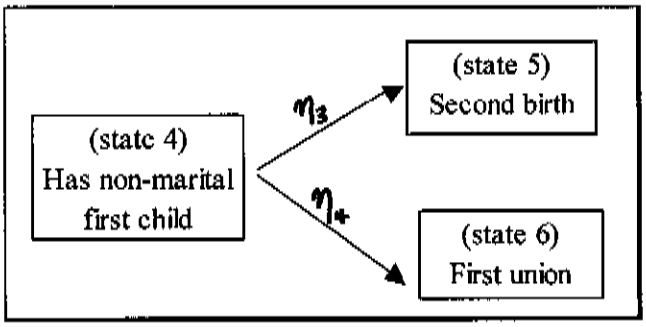

Figure B shows analytical model for hazard of having a non-marital second birth, and another for entry into a union, both conditional on having had a non-marital first birth (state4). Hazards of transitioning from state 4 to state 5 are estimated by η_3 . For this model, failure is defined as 1 for women who had a non-marital second birth and censored for women who stayed in state 4. Two points are critical to note for this model. Firstly, since this is conditional on having a non-marital first birth, some women (particularly those15-19 years during the time of the survey) who did not have a non-marital first birth are censored. This acknowledges that it is possible that at some point in future, they might have a non-marital first birth and even subsequently have a non-marital second birth. By making them right censored at the date of the interviewed, this bias into selection into second birth is implicit in the model. Model for hazards of transitioning from state 4 to first union is presented by model η_4.

Preliminary findings

The findings confirm that non-marital childbearing and entry into conjugal unions are competing as a form of family formation among South African women. Non-marital childbearing is highest for Africans and Coloreds net of differences in socioeconomic status, while the risk of union entry is highest for Whites and Asians. Conditional on a non-marital first birth, the risk of entry into conjugal unions is reduced for Whites compared to Africans. Among Africans, living in a rural setting predicts a more traditional pattern of family formation characterized by higher risk of union entry and lower risk of non-marital childbearing. These findings indicate that as marriage

rates continue to decrease, non-marital childbearing is increasingly becoming a common form of family formation in South Africa.

There is evidence that women who have had a non-marital first birth are delaying both fertility and union entry. This is shown by difference in hazards for different cohorts of women that indicate that women in later cohort are delaying both childbearing (non-marital) and union entry. Childhood place of residence show conservative effects of residing in rural areas during childhood. Rural residence during childhood marginally reduced the hazard of non-marital first birth, but increased the hazard of entering a union by 44%. Indeed, women in rural settings do marry earlier and therefore have lesser exposure to non-marital fertility compared to women growing up in urban settings (Amoateng, 2004).

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