PAA Extended Abstract

Child Marriage and HIV/AIDS Risk Factors in Nigeria

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Introduction and Background

Although there has been a slow global increase in the average age at marriage, the Sub-Saharan Africa and South Asia regions exhibit a continued high prevalence of child marriage. In the past decade, prevalence rates have either remained stationary or have decreased by less than 5 percentage points. Despite the impact and pervasiveness of child marriage; insufficient empirical evidence exists on associations between child marriage and health outcomes in most affected Sub-Saharan African countries, particularly HIV/AIDS related interactions. It is crucial to identify factors that are related to child marriage in different settings in order to effectively develop health programs targeted at married girls.

Defined as a formal marriage or informal union in which a girl lives with a partner as if married before age 18, child marriage poses challenges for women's health, education and vocational outcomes and is a stark reality for many young girls all over the world. Research evidence shows the myriad negative consequences of child marriage on the brides, their children and their communities; even after hosts of confounding factors are controlled. Child brides often experience restricted economic and educational opportunities, thus sentencing them as well as limiting their options for escaping from a life of poverty and hopelessness. They are more likely than adult brides to remain in poverty, have poor access to healthcare, experience domestic violence, and have zero or minimal reproductive choices (Raj et al., 2009; UNICEF, 2005). For many girls, marriage results in confinement and social isolation as they leave their homes and natal villages (Haberland et al., 2005) and incur larger domestic duties and control by husbands and senior household members (Erulkar & Muthengi, 2009).

There is increasing empirical evidence linking child marriage to HIV/AIDS transmission. However, married girls remain invisible to many policymakers and program developers (McIntyre, 2006). Yet, for instance in the context of HIV/AIDS and reproductive health programming; the bulk of sexually active girls aged 15–19 in developing countries are married and these married girls tend to have higher rates of HIV infection than their sexually active, unmarried peers (Glynn et al., 2001; Gavin et al., 2006), a fact still ignored in program design.

Within the HIV/AIDS equation, women have been disproportionately affected and the percentage of women living with HIV has been steadily increasing. In countries where heterosexual transmission is the chief mode of HIV transmission, women are more likely than men to be infected with HIV (UNAIDS,

2005). According to WHO estimates, women comprise 50% of people living with HIV globally and 60% of adults (15-49 years) living with HIV in sub-Saharan Africa (WHO, 2009). There is a very high "gender gap" in HIV infection rates between young women and men between 15-24 years old: 75% of infected persons within this age group are female (World Bank, 2004). This gender disparity in HIV infection rates can be attributed not only to the physiological vulnerability of the female anatomy to infection but also to vulnerabilities and risks created by inter-related social, economic, cultural and legal elements. The female anatomy presents an increased risk of HIV transmission due to hymenal, vaginal, or cervical lacerations (Nour, 2006), especially in virgins and following forced vaginal and anal sex. Research indicates that the risk of HIV infection is higher following forced sex compared to consensual sex (Van der Straten et al., 1998; Gupta et al., 1995).

Findings from multi-country qualitative research show that an incentive to the practice of child marriage is the belief by parents that marrying off a girl early protects her from rape, premarital sexual activity, unintended pregnancies and sexually transmitted infections, especially HIV/AIDS (Nour, 2009; Nour 2006). Contrary to these beliefs, research indicates that marriage by the age of 20 years is a risk factor for HIV infection in girls (UNAIDS, 2004), especially in settings with generalized HIV/AIDS epidemics (Auvert et al., 2001). Both female and male youth are at risk for HIV infection due to risky behavior. However, this risk is increased for female youths and greatly exaggerated for married girls. In a study conducted in Kenya and Zambia (Clark, 2004), 15-19 year olds who were married were 75% more likely to be infected with HIV than their sexually active, unmarried counterparts. Reasons for this huge discrepancy for married girls include high coital frequency; coital violence; decreased or zero condom use; and inability to refuse sex (Clark, Bruce & Dude, 2006). In all the countries studied by the Clark team, the prevalence of unprotected sex in the previous week among females age 10-19 was higher among those married compared to those that were not married.

When young girls are married to much older men, the men tend to be more sexually experienced because of their increased window of sexual activity, tend to have multiple sex partners or wives and tend to have higher rates of infection. Even when girls are married to single but older spouses, there is still a higher likelihood of infection as research indicates that especially for men, later marriage leads to a longer period of premarital sexual activity and thus a higher risk of HIV infection (Bongaarts, 2007). In addition the presence of other STIs during this period raises vulnerability to HIV infection. Therefore,

while married girls are less likely to have multiple sex partners compared to their unmarried peers, the benefit of this protective behavior is offset by their greater exposure via their husbands.

Although married girls are at higher risk of HIV infection, they have comparatively less knowledge of HIV/AIDS and protective strategies used to prevent infection. According to World Health Organization (2009), only 38% of young women have accurate, comprehensive knowledge of HIV/AIDS - being able to correctly identify two ways to prevent sexual transmission of HIV, reject the two most-common local misconceptions about HIV, and know that a healthy-looking person can transmit. Although young women face a higher risk for HIV infection, males are more probable than females to have comprehensive knowledge of HIV (Population Reference Bureau, 2013). Compared with 11% of unmarried sexually active girls, 19% of married girls aged 15–24 do not know ways to avoid HIV transmission, are less likely to have acquired information about HIV from radio, newspapers, or magazines; are less likely to have heard about voluntary counseling and training (VCT) and are less likely to know where to obtain such services (Undie, 2011). Although no studies have documented this; it is possible that married girls would also be less likely to know about the use of the female condom as an alternative to the male condom for protection against pregnancy and STIs.

Due to their peculiar situation, married girls very often fail to fit into initiatives that target adolescents and likewise do not fit into maternal health services due to their age, lack of experience and lack of autonomy (Bruce & Clark, 2003). In adolescent sexual and reproductive health programming, there is the assumption that marriage is safe thus excluding married girls and focusing disproportionately on premarital sexual activity (Clark, 2004). Furthermore, some countries have regulations that outlaw people under the age of 18 from accessing sexual and reproductive health services without parental or spousal consent, preventing easy access to these services (WHO, 2011). In Congo, all clinics and hospitals visited by a team of reporters required the presence of a woman's husband in order to provide contraceptives (Kristof, 2010). Thus, married girls face distinct HIV risks requiring programmatic measures that recognize their special sexual and reproductive health vulnerabilities.

Study Setting

This study focuses on Nigeria which is one of the top 20 "hotspot" countries for child marriage with a national prevalence rate of 46% (women age 20-49 married by age 18) and 22% (women age 20-49 married by age 15) (NPC, 2009). However, these national figures mask substantial differences in the

regional prevalence rates. Child marriage is extremely prevalent in some regions; in the Northwest region, 48% of girls are married by age 15 and 78% are married by age 18 (Adedokun, 2011). This rate is higher than Niger's which has the highest reported national prevalence of child marriage. The median age at first marriage ranges from 15.2 years in the Northwest to 22.8 years in the Southeast. Among women interviewed in the 2008 NDHS, the median age at first marriage in the Northwest for women aged 45-49 was 14.6 and 15.7 for women aged 20-24. This indicates an extremely slight increase in median age at first marriage over a period of 25 years.

An estimated 3.4 million adults and children live with HIV in Nigeria and 1.8 million children have been orphaned because of AIDS (UNAIDS, 2012). Despite these alarming rates, there is limited literature on the influences of child marriage on health outcomes in Nigeria and to the best of the author's knowledge, there has been no research in Nigeria or any other African country with high child marriage rates, on the HIV practices and knowledge of married girls compared to married adults.

Developing appropriate programmatic measures to mitigate the peculiar HIV risks that married girls face depends on several factors such as the levels of HIV and AIDS-related knowledge; the levels of social stigmatization; and access to quality services for HIV counseling and testing, among the married youth population. This paper examines the association of these HIV/AIDS risk factors with child marriage in Nigeria, after controlling for other individual and household level factors. The study also aims to identify whether the outcomes associated with child marriage differ between those first married at age 14 or younger and those first married at between 15-17 years of age. In addition, the research will explore the socio-economic and background factors that influence the association of child marriage with these health outcomes. These analyses will be done both at the national level as well as regionally in order to capture regional differences that may exist in the associated factors and thus develop more effective, contextually appropriate interventions. Results from the study will contribute to programmatic strategies for improving the health of married girls in Nigeria and similar settings.

Data

This paper uses data collected from the Women's Questionnaire of the 2008 Nigeria Demographic and Health Survey (2008 NDHS), which is the latest nationally representative survey conducted in the country of interest. Demographic and Health Surveys (DHS) are nationally-representative cross-sectional

household surveys that provide much-needed data on fertility and mortality, anthropometry, family planning, maternity care, child feeding, vaccination, child morbidity, health services utilization and on AIDS (Boerma & Sommerfelt, 1993). The NDHS was implemented by the National Population Commission (NPC) with technical assistance provided by Macro International Inc. (ICF Macro). Data collection for the survey took place from June to October 2008 and was conducted by trained interviewers.

The population of interest for this study is currently married women aged 20-24 years (n=3,766). The demographic and socio-economic characteristics of the sample are presented in Table 1. Out of the 33,385 women sampled for the 2008 Nigeria DHS, 23,954 were currently married compared to 8,021 that were never married and 1,409 that were formerly married. 15,054 (45%) out of the 25,363 currently and formerly married women reported being married before the age of eighteen. That constitutes about half of the entire sample size. Of these, 7,018 were married before the age of 14 while 8,036 were married between the ages of 15 and 17. The study sample for this analysis is women aged 20-24 years with no missing information on any of the variables per outcome.

This paper focus on three HIV/AIDS outcomes: comprehensive knowledge about HIV/AIDS and means of its transmission; level of stigma; and knowledge/usage of HIV testing services. Child marriage was coded based on the woman's age at first marriage. This variable has three categories: married at 14 years or younger; married between ages 15-17; and married at 18 years or older. The last category is the reference group for the variable. The variable was created in this manner to capture the differences between being married in childhood/early adolescence (≤14) versus getting married in middle adolescence (15-17).

Preliminary Analyses

Chi-square tests were done to determine the statistical significance of bivariate associations of child marriage with prevalence rates for outcome variables. For the continuous outcome variables of HIV stigma and comprehensive HIV/AIDS knowledge; one-way analysis of variance (ANOVA) testing was carried out to compare differences among the means of the child marriage categories. For all statistical tests, a p-value of less than 0.5 is used to determine statistical significance. To avoid biased estimates and overstated significance levels, sampling weights were applied to the data in order to account for the sampling design. This controls for factors such as differences in the probability of selection; non-

response; disproportionate stratification from over-sampling of urban areas and produces unbiased national estimates. Other features of the survey design namely clustering and stratification are also accounted for during data analyses (tabulations and regressions).

Results of preliminary analyses conducted to determine bivariate associations between HIV/AIDS outcomes and age at marriage are presented in Table 2. As observed, better outcomes are seen with an increase in age at marriage and these differentials were statistically significant with all the outcomes examined. Comprehensive knowledge about HIV/AIDS increases with age at marriage. This is a scale variable with possible scores ranging from 0 to 12. The mean score increases from 5.36 (standard error 0.16) among those married at age ≤14 to 5.88 (standard error 0.14) among those married at age 15-17 years and 7.51 (standard error 0.13) among women married at age 18 or older. This indicates that women married at a younger age are less likely to have comprehensive knowledge regarding HIV/AIDS. In a similar vein, a higher stigma level is observed with a younger age at marriage. Women who were married at age ≤14 had a mean score of 3.33 (standard error 0.07) on a stigma scale that had possible scores ranging from 0-5. A higher score indicates a higher level of HIV/AIDS stigmatization. Women who married between the ages of 15 and 17 had a slightly lower mean score of 3.14 while women married at 18 years or older had a mean score of 2.68 on the stigma scale. Statistically significant differentials were also observed in the knowledge and usage of HIV testing services between the age at marriage groups. The percentage of women who have neither tested for HIV nor know where to get tested was 77.42% among those married at ≤14 and almost twice as high as the percentage among those married at age 18 and older (40%). The prevalence of women who had both tested for and knew where to get HIV testing among those married at age ≥18 (28.29%) was 4.9 times higher than those who were first married at age ≤14 (5.80%).

Further analyses

There are two continuous and one categorical outcome variables considered for this paper. These are Comprehensive knowledge about HIV/AIDs and means of transmission; HIV/AIDs stigma; and Knowledge and usage of HIV testing services respectively. Linear regression will be employed for the continuous variables while multinomial logistic regression will be used for the categorical variable. Analysis will include three sequentially introduced regression models.

The model for the linear regressions is outlined below:

$\hat{Y} = \beta_0 + \beta 1\text{child marriage} + \alpha \text{ individual level factors} + \delta \text{ control} + \varepsilon$

For $\hat{Y}$ = comprehensive HIV/AIDS knowledge; the individual level factors and control variables include age, urban-rural residence, household wealth, educational status, having tested for HIV and knowledge of HIV-infected people. To examine the influence of media sources, these additional variables are included in the model: frequency of listening to radio, frequency of watching television and frequency of reading newspapers or magazines. Variable inclusion was determined based on review of existing literature.

For $\hat{Y}$ = HIV/AIDs stigma level; the individual level factors and control variables include age, urban-rural residence, household wealth, educational status, having tested for HIV and comprehensive HIV/AIDS knowledge.

The logistic regression models for the third outcome are outlined below:

$$\text{Logit}\{\text{test\_know=1 vs 0}\} = ß_0 + ß_1 x_1 + \alpha \text{ individual level factors} + \delta \text{ control}$$

$$\text{Logit}\{\text{test\_know=2 vs 0}\} = ß_0 + ß_1 x_1 + \alpha \text{ individual level factors} + \delta \text{ control}$$

where p_1 is the probability of neither testing nor knowing a place to get tested and p_2 is the probability of either testing nor knowing a place to get tested . Individual level factors and control variables included in this model include age, urban-rural residence, household wealth, educational status, level of stigma, woman's ability to negotiate safe sex and knowledge of treatment to help infected people live longer.

Tests will be carried out to test the hypothesis that the association of child marriage with the outcomes of interest is significantly different between those women who first married before the age of 15 and those who first married between the ages of 15-17. In addition, all analyses will be carried out separately on the data at the national level as well as in each pre-defined region of the country, in order to explore the different regional influence of the independent variables.

Table 1: Percentage distribution of currently married women aged 20-24 in Nigeria by selected background characteristics

	%	Weighted %	N*
Educational Attainment			
None	50.96	47.65	1919
Primary	19.14	19.63	721
Secondary/higher	29.90	32.72	1126
Type of Place of Residence			
Urban	24.48	26.75	922
Rural	75.52	73.25	2844
Region of Residence			
North Central	18.75	15.02	706
North East	23.66	17.10	891
North West	31.65	36.03	1192
South East	6.13	7.10	231
South South	10.41	11.91	392
South West	9.40	12.84	354
Religion			
Christian	36.09	37.53	1359
Islam	61.47	60.32	2315
Traditionalist/Other	1.75	1.48	66
Missing	0.69	0.67	26
Ethnicity			
Hausa/Fulani	43.28	44.21	1630
Yoruba	8.55	10.83	322
Igbo	7.41	8.64	279
Other	40.76	36.32	1535
Age			
20	34.07	33.82	1283
21	11.95	11.90	450
22	20.18	19.94	760
23	18.06	18.02	680
24	15.75	16.32	593
Age at first marriage			
<=14	27.75	26.73	1045
15-17	37.65	37.06	1418
>=18	34.60	36.21	1303
Age at first birth			
<=14	10.62	10.42	400
15-17	34.09	33.27	1284
>=18	42.64	43.31	1606
Missing	12.64	13.00	476
Household Wealth Quintile			
Poorest	27.85	24.91	1049
Poorer	24.32	23.68	916

Middle	19.60	18.97	738
Richer	17.39	18.82	655
Richest	10.83	13.62	408
Total children ever born			
0	12.64	13.00	476
1	28.28	28.48	1065
2	30.38	30.01	1144
3+	28.70	28.51	1081
Spousal age gap			
Husband older by 0-4 yrs or younger or same age	14.55	14.57	548
Husband older by 5-9 yrs	36.30	35.38	1367
Husband older by 10 or more years	49.15	50.01	1851
Spouses' relative education			
Same level	53.37	52.74	2010
Wife educated higher	10.70	11.39	403
Husband educated higher	34.44	34.25	1297
Missing	1.49	1.62	56
Polygyny			
No co-wife	72.86	73.41	2744
1 or more co-wives	26.26	25.71	989
Missing	0.88	0.88	33
Mobility			
Not a big problem	81.04	81.53	3052
A big problem	18.48	17.95	696
Missing	0.48	0.52	18
Decision making index			
0	81.23	79.68	3059
1-2	11.84	12.41	446
3-4	2.71	3.19	102
Missing	4.22	4.72	159
Ability to refuse sex or request condom use			
Low	41.85	39.91	1576
Medium	30.70	31.14	1156
High	27.00	28.50	1017
Missing	0.45	0.45	17
Tolerance of wife beating in any situation			
No tolerance	44.37	45.26	1671
Tolerance	55.31	54.38	2083
Missing	0.32	0.35	12
Total	100.00	100.00	3766

* N is unweighted frequency

Table 2: HIV/AIDS outcomes among currently married women aged 20-24 in Nigeria, by age at first marriage

	Married ≤14 years (n=1045)	Married 15-17 years (n=1418)	Married ≥18 years (n=1303)	Total (3766)
	Weighted % (N) or Weighted mean (SE)			
Comprehensive knowledge ***				
Mean (SE)	5.36 (0.16)	5.88 (0.14)	7.51 (0.13)	6.34 (0.11)
HIV/AIDS stigma ***				
Mean (SE)	3.33 (0.07)	3.14 (0.07)	2.68 (0.07)	3.01 (0.05)
Usage & Knowledge of HIV testing services (%) ***				
Neither tested nor know	77.42 (801)	68.73 (983)	40.09 (560)	60.67 (2344)
Either tested or know	16.77 (179)	22.01 (310)	31.62 (418)	24.10 (907)
Both tested and know	5.80 (62)	9.26 (123)	28.29 (324)	15.24 (509)
Total	100.00	100.00	100.00	100.00

*** Test of significance is design-based F-test (adjusted Wald for means) for differentials in health outcomes between age at marriage categories at $p < .0005$; ** $p < .005$; * $p < .05$

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