TRENDS AND FACTORS AFFECTING THE INTERVAL FROM MARRIAGE TO FIRST BIRTH AMONG WOMEN OF REPRODUCTIVE AGE IN NIGERIA

D.M. Moradeyo, J.O. Akinyemi, O.B.Yusuf

Department of Epidemiology and Medical Statistics, Faculty of Public Health, University of Ibadan.

Correspondence:
Dr. D.M. Moradeyo
Department of Epidemiology and Medical Statistics,
Faculty of Public Health,
University of Ibadan.
Email: marymoradeyo@gmail.com

Submission Date: 13th March, 2024
Date of Acceptance: 25th Dec., 2024
Publication Date: 31st Dec., 2024

ABSTRACT

Background: **The shorter the time interval between marriage and first birth, the sooner subsequent pregnancies are likely to occur in the absence of contraceptives and family planning. This can have negative impacts on the mother, children and society.**

This study explores the trend in the time between marriage and the first birth among Nigerian women.

Materials and Method: **Kaplan-Meier's estimation and multilevel survival models were used to analyze data from the Nigeria Demographic and Health Survey (NDHS) records from 1990, 2003, 2008 and 2013. The study focused on women who entered marriage without children or pregnancy. The surveys employed a two-stage cluster sampling method. Variables extracted included birth cohort, age at sexual initiation, age at first marriage, age at first birth, educational level, religion, place of residence, knowledge of contraceptive and ovulatory cycle.**

Results: **The results indicated that the median time to first birth after marriage decreased from 2 years to 1 year. Significant factors associated with a higher likelihood of having first birth shortly after marriage included having primary education (HR = 1.17; CI=1.14-1.21), knowledge of contraceptives (HR= 1.21; CI =1.20-1.26, ovulation cycle (HR=1.21, CI=1.18-1.25), marriage above 19 years (HR = 1.19, CI=1.15-1.25), women residing in South east (HR= 1.17, CI =1.10-1.22), South West (HR = 1.30, C.I=1.24-1.37) and community influence (p=1.37, ICC = 0.06).**

Conclusion: **The reduced time to first birth after marriage underscores the need for policy-makers to promote higher level education and family planning among women of reproductive age in Nigeria.**

Keywords: First Marriage, Fecundity, Time to first birth, Multilevel Survival models.

INTRODUCTION

The birth of the first child is the foremost visible outcome of being fertile and it serves as an event of great social and individual significance. First birth marks a woman's transition into motherhood.[1,2,3] The birth of the first child plays an important role in the future of a woman and has a direct relationship with the nation's fertility.[4] The expectation of most women, and especially married couples, is to have children, the longer they stay without having children the more frustrated they become.[5]

The waiting time to first birth after marriage is defined as the interval between the time a couple is wedded, whether legally, socially or traditionally and the arrival of their first child. In sub-Saharan Africa, marriage without children is incomplete, and family members of the couple expect the first birth within a short period after marriage to prove the couple's fecundity, especially the wife. In addition, the birth of the first child is also proof of the husband's fertility.[6] Previous studies have shown that the time to first birth after marriage can affect the survival and happiness of a marriage.[7,5] Society and parents' pressure on the bride to have her first birth and subsequent childbirth is difficult to resist in developing countries.[8] Therefore, to ensure sustainability of a marriage, signs of pregnancy and birth of the first child is expected from the bride within the first year of marriage.[5]

Though the occurrence of first birth within a short period after marriage is expected to bring joy and happiness, it also has negative impact on the women and population of a country. The earlier the arrival of the first baby in a marriage the earlier the subsequent pregnancy in the absence of contraceptive use and family planning.[5] Sub-Saharan Africa is burdened by high rates of unintended pregnancies and only 22% of married women are currently using contraceptives.[9] Sub-Saharan Africa has the lowest contraceptive

prevalence and highest level of unmet need for contraception of all world regions. Nigeria, with a contraceptive prevalence rate of 13-15% is not exempted.[10] If it happens that an undesirable pregnancy occurs after the first baby it can lead to unsafe or illegal abortion. Otherwise the risk of bearing many children after first birth cannot be ruled out in the absence of contraceptives.

The waiting time to first birth after marriage is either stable or decreasing in the previous studies reviewed. A study by Amin & Barjrachanya[11] stated that in the countries where median age at first marriage is under 17 years, the median time to first birth after marriage is consistently higher than 2 years (24 months). Other studies which estimated the median time to first birth after first marriage to be about 2 years were carried out in Uganda and Ghana.[12,5]

A decrease in time from 36 months for older cohorts to 27 months for the younger cohorts was found in a study on age at first marriage and first birth interval in Ethiopia by Gurmu and Etana.[13] The decline in time to first birth after marriage among the younger marriage cohorts was attributed to the signal of response to policy and programmatic interventions which prohibit marriage before age 18. Similar to this is a study to assess age at marriage and the first birth interval among young Chinese couples, the long waiting to first birth after marriage decreased from around 34 months in the 1950s to less than 18 months in the 1980s.[14] This was attributed to the Chinese government's family planning programme which is believed to have caused a rise in age at marriage and restricting fertility. In order to compensate for late start, couples tend to bear their first child soon after marriage.

Age at first marriage was found to be one of the significant predictors of bearing a child after first marriage.[15,16,17,13,18,12] It was discovered that women who marry below 20 years of age have a lower chance of having their first children early compared to women who marry at a slightly older ages (20 to 31 years). In contrast, age at first marriage, either younger age or older age was not a predicting factor of transition time to first birth after marriage in a study carried out by Anuwoje and Albert[5] in Ghana.

There were chances of having the first child earlier after marriage in rural areas compared to urban areas.[13,19] However Anuwoje and Albert[5] showed that the place of residence, whether rural or urban, has no significant effect on the time to first birth after marriage. Educational attainment of a woman has no significant effect on her time to first birth after marriage.[5,12] In some other studies, education was a significant predictor of time to first birth. Women with higher levels of education were found to have a shorter waiting time to first birth after marriage.[20,13,4]

The chance of having a first child after marriage was found to be associated with the knowledge of ovulation cycle.[12] Women who are conscious of their ovulation cycles have a higher chance of having their first children early compared to those that are ignorant of their ovulation cycles. Also, women who have access to reproductive information on radio, television and newspapers have a higher chance of having their first children earlier than those without access to reproductive health information.[19]

Women who initiate sex at early ages have a slightly higher chance of experiencing their first births more quickly after marriage compared to women who started sex at later ages.[21,12] Anuwoje and Albert[5] showed that age at first intercourse has no significant effect on transition time to first birth after marriage.

Previous studies in Nigeria have investigated time and factors affecting age at first marriage and first birth [22,23,24,25] but the waiting time between marriage and first birth has scarcely been analyzed. Understanding of waiting time between marriage and first birth is of direct relevance to health planners and policymakers attempting to control population variables and enforce or promote safe motherhood.[26, 23] This study will shed more light on the need to increase efforts on improvement of access to effective contraceptive methods, family planning in Nigeria. The purpose of this study is to determine transition time to first birth after marriage and the factors associated with it.

Materials and methods

This study utilized secondary data extracted from the Nigeria Demographic and Health Survey 1990, 2003, 2008 and 2013. Three types of questionnaires were used for the NDHS: the household questionnaire, the women's questionnaire, and the men's questionnaire. The women's questionnaire was used to elicit information on the women aged 15-49 years. The NDHS provides representative sample survey on up-to-date information on background characteristics, fertility levels, marriage, fertility preferences, awareness and the use of family planning methods of the respondents. The target groups (women aged 15-49) were randomly selected in different households across Nigeria.

A total of 88,734 records of women were selected using a stratified two-stage cluster design consisting of 1,116 clusters/communities. The primary sampling

unit (PSU) was regarded as a cluster which was defined on the basis of enumeration areas (EAs). Out of 88,734 women extracted a total of 50,741 women, who went into marriages without children or pregnancies, were considered while 5,755 who did not experience first births after marriage at the time of the survey were right censored. The study categorized the women into six birth cohorts: 1940-1949, 1950-1959, 1960-1969, 1970-1979, 1980-1989 and 1990-1998. The regions comprised the following states: North-Central region (Benue, Kogi, Kwara, Nasarawa, Niger and Plateau states, as well as Federal Capital Territory, Abuja); North-East region (Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe states; North-West region (Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara states); South-East region (Abia, Anambra, Ebonyi, Enugu, and Imo states); South-South region (Akwa Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers states); and South-West region (Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo states).

Study Variables

The dependent variable in this study is the time to first birth after marriage. A respondent's time is censored after marriage when she has not given birth to her first child at the time of the survey.

Age at first marriage: This is the age at which a woman enter into marriage (extracted from the NDHS)

Age at first birth: This is the age at which a woman have her first child (extracted from the NDHS)

Time to first birth after marriage: Calculated from time between the age at first marriage and her age at first birth.

Independent variables considered from the survey were birth cohort, educational level, religion, ever had a terminated pregnancy, knowledge of contraceptives, knowledge of ovulation cycle, age at sexual initiation, age at first marriage, place of residence and region of residence.

Statistical analysis

Descriptive statistics such as frequency distributions was used to present characteristics of women by socio-demographic, and socio-economic factors.

The median time to first birth after first marriage was estimated using Kaplan-Meier method. The time at which 50% and 75% of the women experienced first births after marriage was presented in tables and graphs. These proportions showed the median and maximum time to first birth after marriage.

The factors associated with time to first birth after marriage were assessed using a two-level mixed effect proportional hazard model. This is a multilevel approach which puts into consideration the censoring and clustering of the NDHS data used in this study. The transition time to first birth after marriage is likely to be correlated with women within the same or similar cluster.

$$\mathbf{h}_{ij}(t) = \mathbf{h}_o(t)\exp(\beta_k X_k + W\epsilon$$

$$\mathbf{h}_{ij}(t) = \mathbf{h}_o(t)\exp(\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots \beta_k X_k + W_j \epsilon \quad \text{Eq.3}$$

Where:

$\mathbf{h}_{ij}(t)$ = hazard of first birth for the women

Where $\mathbf{h}_o(t)$ is the baseline hazard at time t = 0 for X = (all covariates at their appropriate reference levels), $\mathbf{h}_o(t)$ is assumed to be parametric.

β_k is the regression coefficients of the independent variable X_k.

W_j is the community/cluster and ϵ their error terms. W_i are assumed to be independent and follow a multivariate normal distribution with mean zero and unknown covariance (individual women variance σ_i^2 and random effect variance σ_j^2).

$$W_i \epsilon \sim N(0, \sigma^2_E)$$

Fixed effects and random effects

Fixed effect refers to the effect of independent variables (covariates) on the outcome. The result of regression coefficient (β_k) in mixed effect proportional hazard models for the dependent variable were reported in terms of estimated hazard ratios (Hazard functions conditioned on the covariates and the random effect) with their 95% confidence intervals.

Random effects in this study were expressed as Intra-Cluster Correlation (ICC). It measured variation in time to first birth after marriage that can be attributed to the cluster/community in which the women were residing.

The Log Likelihood result of the mixed effect proportional hazard model was estimated to assess the fitness of the model. Stata 14 software was used for the analysis and Excel 2013 was used for presentation of the outcome of the analysis.

RESULTS

Characteristics of the women

More than half of the women (69.1%) resided in the rural part of the country. About one-third were from the North West region of Nigeria. The highest proportion of the women (53.4%) had no education followed by those with primary education (20.6%). Majority of the women had never terminated any pregnancy (77.6%). Knowledge of contraceptives and ovulation cycle was high (72.5% and 83.6% respectively). Majority of the women (82.3%) had initiated sex between ages 10 and 19 years. Also, a high

Table 1: Frequency distribution of women by their socio-economic factors and demographic factors. Merged NDHS Reports 1990, 2003, 2008 and 2013).

Variables	Number of women (%)
Birth cohort	
1940-1949	718 (1.4)
1950-1959	2324 (4.6)
1960-1969	10606 (20.9)
1970-1979	14905 (29.4)
1980-1989	16254 (32.0)
1990-1998	5934 (11.7)
Total	(100.0)
Educational level	
No education	27118 (53.4)
Primary	10447 (20.6)
Secondary	10149 (20.0)
Higher	3027 (6.0)
Total	(100.0)
Religion	
Christian	19343 (38.1)
Islam	30290 (59.7)
Traditionalist	754 (1.5)
Others	354 (0.7)
Total	(100.0)
Ever had a terminated pregnancy	39382 (77.6)
No	6431 (12.7)
Yes	4928 (9.7)
Not available	(100.0)
Total	
Knowledge of contraceptives	
know no method	13960 (27.5)
know method	36781 (72.5)
Total	50741(100.0)
Knowledge of ovulation cycle	
No	8329 (16.4)
Yes	42412 (83.6)
Total	50741 (100.0)
Age at first sex	
10-19 year	41736 (82.3)
Above 19 years	9005 (17.7)
Total	50741 (100.0)
Age at first marriage	
10-19 year	37361 (73.6)
Above 19 years	13380 (26.4)
Total	50741 (100.0)
Place of residence	
Urban	15702 (30.9)
Rural	35039 (69.1)
Total	50741 (100.0)
Region	
North Central	7993 (15.8)
North East	10767 (21.2)
North West	16513 (32.5)
South East	4247 (8.4)
South South	5124 (10.1)
South West	6097 (12.0)
Total	50741 (100.0)

proportion of the women assessed entered marriage between 10 and 19 years of age (73.6%) (Table 1).

Time to first birth after first marriage

The distribution and patterns of the observed time to first birth after marriage are presented in Table 2 and

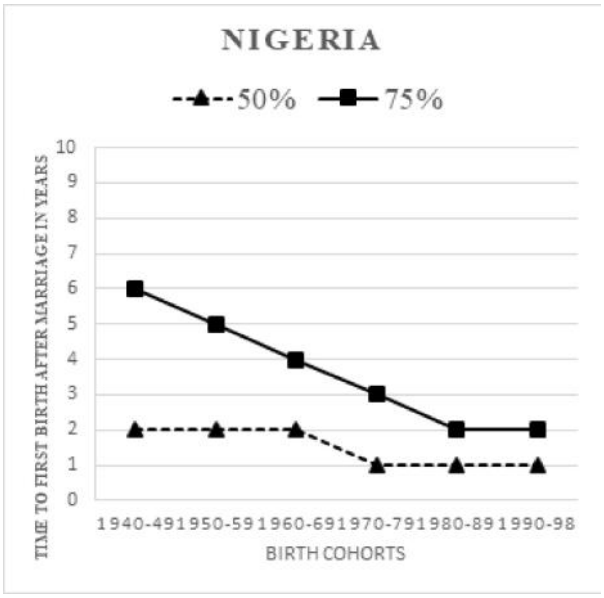

Figure 1: Trend of time at which 50% and 75% of the women have their first birth after first marriage in Nigeria by their birth cohort

Figure 1. The approximate median time to first birth after marriage in Nigeria decreased from 2 years in older birth cohort (1940-1969) to 1 year in the more recent birth cohort (1980-1989). Most of the women (75%) gave birth to their first child decreased from 6 years in 1940-49 birth cohort to 3 years in 1980-89 birth cohort.

Figure 2: Time at which 50% and 75% of the women have their first birth after first marriage in South East Nigeria by their birth cohort

The regional estimate showed that the median time to first birth after marriage was stable at 1 year among the birth cohorts in the southern part of the country. The first birth interval among majority of the married women (75%) was also stable at 2 years (figure 2-4).

Table 2: Estimate of time to first birth after marriage among Nigerian women

	1940-1949			1950-1959			1960-1969			1970-1979			1980-1989			1990-1998		
	T	F(t)	SE F(t)	T	F(t)	SE F(t)	T	F(t)	SE F(t)	T	F(t)	SE F(t)	T	F(t)	SE F(t)	T	F(t)	SE F(t)
Nigeria																		
50%	2	0.4721	0.0186	2	0.4905	0.0104	2	0.5435	0.0048	1	0.5000	0.0034	1	0.5000	0.0034	1	0.5000	0.0063
75%	6	0.7396	0.0164	5	0.7268	0.0092	4	0.7596	0.0041	3	0.7290	0.0036	3	0.7829	0.0032	2	0.7315	0.0058
NC																		
50%	2	0.5038	0.0437	2	0.5540	0.0265	1	0.5000	0.0105	1	0.5000	0.0091	1	0.5000	0.0091	1	0.5000	0.0184
75%	4	0.7023	0.0400	4	0.7330	0.0236	3	0.7230	0.0111	2	0.7500	0.0096	2	0.7350	0.0084	2	0.7500	0.0141
NE																		
50%	11	0.5455	0.0671	2	0.5000	0.0208	2	0.5000	0.0113	2	0.5123	0.0092	1	0.5000	0.0068	1	0.3980	0.0119
75%	18	0.7455	0.0587	7	0.7538	0.0239	5	0.7601	0.0096	4	0.7794	0.0076	3	0.7701	0.0080	2	0.7515	0.0105
NW																		
50%	6	0.5081	0.0368	5	0.5000	0.0189	3	0.5019	0.0090	2	0.5000	0.0050	2	0.5000	0.0068	1	0.5000	0.0088
75%	14	0.7405	0.0322	10	0.7504	0.0164	6	0.7626	0.0076	5	0.7686	0.0064	3	0.7500	0.0064	2	0.7500	0.0089
SE																		
50%	1	0.5000	0.0418	1	0.5000	0.0242	1	05000	0.0129	1	0.5000	0.0127	1	0.5000	0.0155	1	0.5000	0.0418
75%	3	0.7500	0.0404	2	0.7500	0.0255	2	0.7500	0.0131	2	0.7500	0.0121	2	0.7500	0.0131	2	0.7500	0.0302
SS																		
50%	1	0.5000	0.0529	1	0.5000	0.0303	1	0.5000	0.0129	1	0.5000	0.0108	1	0.5000	0.0112	1	0.5000	0.0269
75%	3	0.7500	0.0504	3	0.7671	0.0286	2	0.7500	0.0137	2	0.7500	0.0112	2	0.7500	0.0115	2	0.7500	0.0219
SW																		
50%	1	0.5000	0.0405	1	0.5000	0.0248	1	0.5000	0.0123	1	0.5000	0.0103	1	0.5000	0.0118	1	0.5000	0.0339
75%	2	0.7500	0.0383	2	0.7500	0.0238	2	0.7610	0.0108	2	0.7500	0.0096	2	0.7500	0.0101	2	0.7500	0.0258

F(t) cumulative probability of first birth after marriage

Though the pattern was not the same in the northern part of the country, the median time and most of the married women had their first births after marriage also decreased over time to 1 year (figure 5-7).

of contraceptives (H.R, 1.23; C.I (1.202-1.264)), women with knowledge of ovulation cycle (H.R, 1.21; C.I (1.178-1.246)) and women who marry above the age of adolescence (H.R, 1.19; C.I (1.146-1.236)). Also

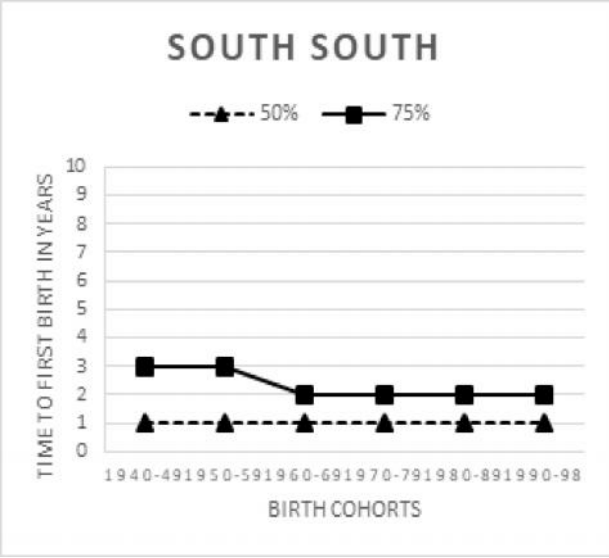

Figure 3: Time at which 50% and 75% of the women have their first birth after first marriage in South South Nigeria by their birth cohort

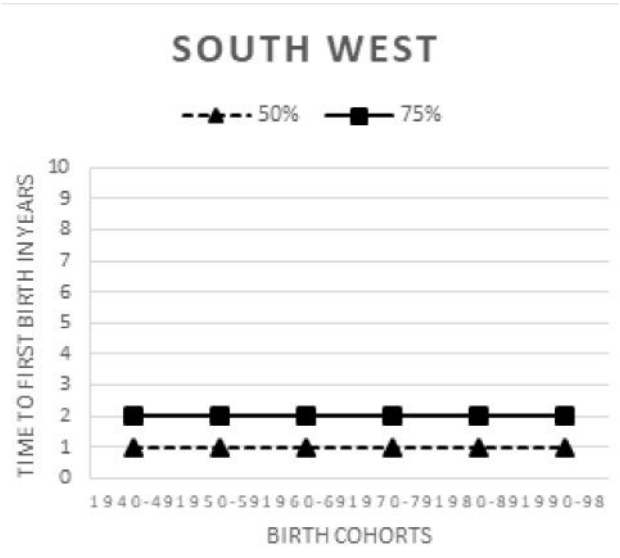

Figure 4: Time at which 50% and 75% of the women have their first birth after first marriage in South West Nigeria by their birth cohort

Predictors of time to first birth after marriage
Fixed effect

From Table 3, the significant factors with estimated high hazard of transition to first birth after marriage in Nigeria are women with primary school education (H.R, 1.17; C.I (1.136-1.205)), women with knowledge

women from the South East (H.R, 1.16; C.I (1.095-1.220)) and South West (H.R, 1.3; C.I (1.236-1.372)) have high hazard of transition to first birth after first marriage than women from the northern parts of the country.

Table 3: Mixed effect proportional hazard model of time to first birth after marriage

Women characteristics (Fixed Part)	HR	95% Confidence Interval	P-value
Birth cohort			
1940-1949	1(reference)		
1950-1959	1.463	1.337-1.602	<0.001
1960-1969	2.029	1.858-2.216	<0.001
1970-1979	2.498	2.282-2.735	<0.001
1980-1989	3.377	3.081-3.701	<0.001
1990-1998	4.009	3.639-4.417	<0.001
Educational level			
No education	1(reference)		
Primary	1.170	1.136-1.205	<0.001
Secondary	1.077	1.040-1.115	<0.001
Higher	0.942	0.894-0.991	<0.001
Religion			
Christianity	1(reference)		
Islam	0.893	0.864-0.922	<0.001
Traditional	0.945	0.870-1.025	<0.001
Others	1.109	0.990-1.242	0.073
Knowledge of contraceptives			
Know no method	1(reference)		
Know method	1.232	1.202-1.264	<0.001
Ever terminated pregnancy			
No	1(reference)		
Yes	0.867	0.842-0.892	<0.001
Knowledge of ovulation cycle			
No	1(reference)		
Yes	1.211	1.178-1.246	<0.001
Age at first marriage			
10-19years	1(reference)		
Above 19years	1.190	1.146-1.236	<0.001
Age at sexual initiation			
10-19 years	1(reference)		
Above 19 years	1.007	0.968-1.048	<0.001
Region of residence			
North Central	1(reference)		
North East	0.849	0.816-0.883	<0.001
North West	0.716	0.690-0.742	<0.001
South East	1.156	1.095-1.220	<0.001
South South	1.083	1.026-1.145	0.004
South West	1.302	1.236-1.372	<0.001
Place of residence			
Urban	1(reference)		
Rural	0.947	0.921-0.974	<0.001
Random effect			
Individual women variance (σ_i)	0.878		
Cluster variance (σ_i)	0.053	0.046-0.061	
ICC	0.057	0.055-0.059	
Log likelihood	-58461.903		0.000

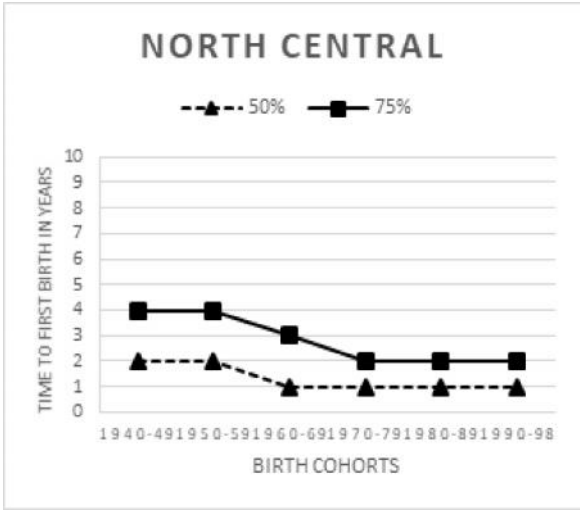

Figure 5: Time at which 50% and 75% of the women have their first birth after first marriage in North Central Nigeria by their birth cohort

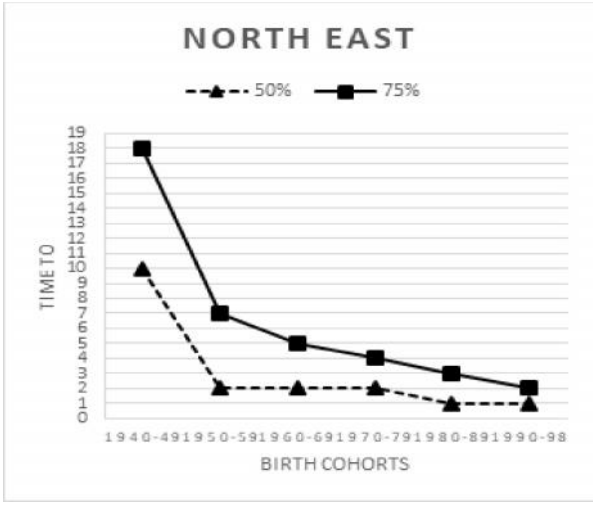

Figure 6: Time at which 50% and 75% of the women have their first birth after first marriage in North East Nigeria by their birth cohort

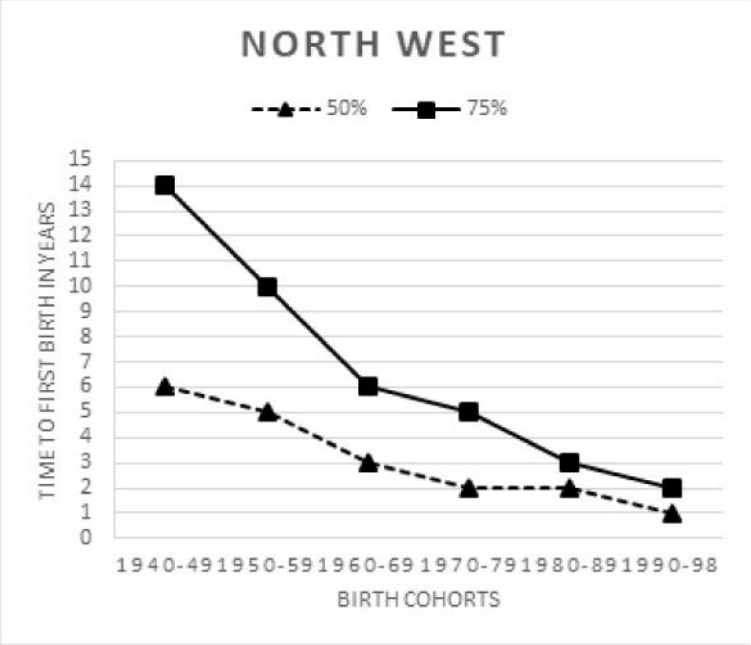

Figure 7: Time at which 50% and 75% of the women have their first birth after first marriage in North West Nigeria by their birth cohort

Random effect on time to first birth after marriage
From Table 3, the estimated hazard of time to first birth after marriage (conditioned on the covariates and on the random effect) is a monotonically increasing function (p = 1.368). Model with random effects (cluster/community) fits better than the model without random effects (P<0.005). The intra-cluster correlation was 0.057.

DISCUSSION

This study examined the trend in time to first birth and marriage and the associated with it. The findings in this study showed a decreasing trend in time to first birth after marriage. The median time to first birth decreased to 1 year in a recent birth cohort, and majority of the women had their first children within 3 years of their marriages. The short interval of time could be attributed to that fact that in most African communities, Nigeria inclusive, a newly-wedded couple should show proof of fecundity within a short period of time after marriage. Early birth of the first child after marriage is expected to bring joy and happiness to a marriage, if delayed can affect the survival of such a marriage due to external pressure from family and the community. So, almost every new couple would like to have the first child as soon as possible after marriage. The short median time to first birth after marriage reported in this study is consistent with that of Anuwoye and Albert,[5] Gurmu and Etana,[13] Mubiru *et al.*[12] Wang Feng and Yang Quanhe.[14] In the southern region of the country, a stable median time of 1 year to first birth after marriage was discovered over the trend of the birth cohorts while that of the northern region also decreased to 1 year in the recent birth cohorts. The regional variation in time to first birth after marriage could be linked to the fact that Nigeria comprises many tribes with diverse traditional norms, beliefs and marriage system practices.[13]

Women with the knowledge of contraceptives tend to have a higher chance of starting childbearing earlier than those without the knowledge of contraceptives. This may be because women with the knowledge of contraceptives and family planning are exposed to information related to reproductive health issues which may help in planning conception and childbirth.

The chance of starting childbearing was 21% higher among women with the knowledge of ovulation cycle compared to those without the knowledge of ovulation cycle. This is because women with the knowledge of ovulation cycle can plan for pregnancy early after marriage since they understand when to get pregnant during their menstrual cycle. On the contrary, ignorance of ovulation cycle and reproductive health issues can affect a woman's conception after marriage, especially among those not having regular intercourse or couples living apart and having little intimacy.

Women from the southern part of the country had a higher chance of giving birth to their first children earlier, in comparison to their counterparts in the northern part. The regional variation in the time of transition to motherhood after marriage could be linked to traditional norms and values governing the formation and stability of marriage in the northern

northern part. The regional variation in the time of transition to motherhood after marriage could be linked to traditional norms and values governing the formation and stability of marriage in the northern part of the country.[27] Child marriage is rampant in North West Nigeria where the prevalence is as high as 76%.[27] This situation predisposes the women to remain in their fathers' houses until their husbands are financially stable to have them, and live together. Also, a young married girl may be living with her mother-in-law or parents due to physical immaturity and psychological unpreparedness to manage household chores. This type of living arrangement after marriage could also lengthen the time to first birth.[13]

It was revealed in this study that women who married above the age of adolescence had a 19% higher chance to give birth to their first children when compared to those within the adolescent age. This could be attributed to their physical and mental readiness to marry and start childbearing on time. This is consistent with the findings in Mubiru *et al.*[12] and Gurmu and Etana[13] studies.

The chance of experiencing first birth after marriage among women who had ever terminated any pregnancy was about 13% lower than those who had no pregnancy termination. This is consistent with the evidence that termination of pregnancy can delay the chances of childbearing compared to a situation where the women had not experienced any termination of pregnancy.[12,13,5]

The intra-cluster correlation of approximately 6% showed that there was correlation between the risks of early first birth after marriage among women living in the same community, though not strong. It also implies that approximately 6% of the total variance in transition to first birth after marriage can be attributed to the community in which the women were residing. Therefore, the community where women reside also influences the time interval to first birth.

CONCLUSION

The time to first birth after marriage decreased over time to 1 year in Nigeria as a whole, in the Northern region and stable at 1 year in the Southern region of the country.

Factors associated with shorter time to first birth after marriage are birth cohort, educational level, knowledge of contraceptive, knowledge of ovulation ever terminated pregnancy, age at first marriage, region of residence and the community where a woman resides. Time to marriage and first birth appear to be events that are easily and accurately measured though recall bias is a major issue in this study especially for the older women in the survey.

The factors considered in this study are variables at the time of study which may not in all cases be the factor at the time the women experienced the event. For example, the place of residence is the place the respondent resides at the time of the survey not at the time the event occurred.

The NDHS data is a good representative of all the regions in the country therefore making the result of this research work to be statistically generalised for the entire country.

More efforts should be made by government to promote the rights of the girl-child and improve access to education in all the regions of the country, because improved education helps in increasing age at first marriage and first birth in the context of marriage. Increase in the age at first marriage and first birth help to reduce the number of childbirth a woman is exposed to in her reproductive lifespan. Though, it is possible that in the absence of contraceptives, this might not work or help because some of these women would want to compensate for their late start of childbirth and rush the subsequent pregnancies. So therefore, family planning services should be made easily accessible at all levels of care to encourage women on child spacing and reasonable number of children to be born in this high fecund country like Nigeria.

Moreover, abortion law should be strictly followed and women should be educated on the likely delay abortion can cause in bearing children after marriage. Also Information on reproductive health should be made available to help women on making decision on when to become pregnant and to avoid unplanned pregnancy.

Conflict of Interest Statement

The authors affirm that they have no conflict of interests to declare.

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