

Early Life Course Transitions and Their Impact on Later Life Maternal Reproductive Choices: A Case of Contraceptive Use Behaviour in Uganda

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Background

Contraceptive use is a key aspect of reproductive health, enabling individuals and couples to have children when they are desired. In most contexts, childbirth typically follows sexual intercourse, making sex a direct risk factor for birth [1]. While marriage is highly valued socially and culturally, it is important to note that childbirth is not exclusive to married women. Both married and unmarried women engage in sexual activity, and hence all are at risk of pregnancy [2,3,11].

Marriage, however, may carry a greater pressure to bear children. In many African settings, marriage is not just a social union but is closely tied to expectations of childbearing. Women who marry often face pressure from family and partners to have children soon after marriage, positioning marriage as a risk factor for birth [6]. Therefore, the sequence and timing of early life transitions of sexual debut, first birth, and marriage are critical in understanding reproductive outcomes. These transitions reflect prevailing societal norms and behaviors and are especially important in contexts like Uganda, where early sexual activity, teenage pregnancies, and child marriages are common [4,7,9]. Such early life events contribute to high rates of unintended pregnancies and elevated numbers of children ever born (CEB) [4,8,10].

Reproductive behavior, including contraceptive use, is not static but varies across generations. Differences in birth cohorts reveal shifting patterns, with younger generations exhibiting different attitudes and practices related to contraception compared to older cohorts [6]. Contraceptive use itself has a significant influence on reproductive outcomes, making it essential to understand how early life event trajectories may shape later-life use of contraception. Therefore, it is important to investigate whether the sequencing of early life events i.e. first sex, first birth, and first marriage, is associated with later-life contraceptive use, and how this association differs by birth cohort. This understanding can provide critical insights, as it is often more effective to intervene at the level of behavior than to respond to reproductive outcomes after they have occurred.

Uganda, a landlocked country in East Africa, has a population exceeding 45 million [13]. Key fertility indicators include a Total Fertility Rate (TFR) of 5.2 children per woman [14], a Maternal Mortality Ratio (MMR) of 336 deaths per 100,000 live births [15], and a Contraceptive Prevalence Rate (CPR) of 39% among married women [16].

Research questions

1. Is later life contraceptive use associated with sequences of early life events (Sex, Birth, Marriage) in the different cohorts
2. If so, how are sequences of early life events (Sex, Birth, Marriage) associated with later life contraceptive use by cohort?

Objective

This study investigated whether four distinct sequences of early life events i.e. Marriage-Sex-Birth (MSB), Sex-Marriage-Birth (SMB), Sex-Birth-Marriage (SBM), and Sex-Birth-no Marriage (SBnoM) are associated with modern contraceptive use among 13,284 parous women in Uganda by birth cohort.

Data and Methods

This study used data from the 2016 Uganda Demographic and Health Survey (UDHS), focusing on 13,284 women aged 15–49 who had ever given birth. The outcome variable was contraceptive use, coded as “1” for current users of modern methods and “0” for non-users, regardless of intention to use. Women using traditional contraceptive methods were excluded from the study. Birth cohort was included as a confounding factor, categorized as: Cohort 3 (1966–1980, aged 34–49), Cohort 2 (1981–1990, aged 25–34), and Cohort 1 (1991–2000, aged 15–24). This allowed for examination of generational differences in contraceptive use and the influence of early life transitions.

The main explanatory variable was the sequence of first sex, birth, and marriage for each woman, derived from self-reported ages at first sex, first birth, and first marriage in completed years. Based on the order of these events, women were categorized into sequences such as: Marriage > Sex > Birth (MSB), Sex > Birth > Marriage (SBM), Sex > Marriage > Birth (SMB), and Sex > Birth > no Marriage (SBnoM). This variable captured the early life course transition of reproductive events. Other independent variables included religion, place of residence, education level, wealth index, region, employment status, sex of household head, children ever born, current marital status and pregnancy termination.

Data analysis was performed in STATA 17.0 and included frequencies and percentage summaries of contraceptive use, sequences, and median ages by birth cohort. A Pearson chi-square test was used to determine the existence of an association of the sequence variable with contraceptive use in each birth cohort. A binary logistic regression was used to determine the effect of sequence variable on contraceptive use by birth cohort. A 5% significance level was used.

Results

Table 1: Descriptive statistics

	All women	Cohort 1 (1991-2000)	Cohort 2 (1981-1990)	Cohort 3 (1980-1966)
	N=13,284	N=3,582	N=5,145	N=4,557
Modern Contraceptive use, n (%)				
No	8,703 (65.51%)	2,440 (68.12%)	3,178 (61.77%)	3,085 (67.70%)
Yes	4,581 (34.49%)	1,142 (31.88%)	1,967 (38.23%)	1,472 (32.30%)
Sequence, n (%)				
Marriage>Sex>Birth, MSB	5,701 (42.92%)	1,545 (43.13%)	2,182 (42.41%)	1,974 (43.32%)
Sex>Birth>Marriage, SBM	2,197 (16.54%)	479 (13.37%)	904 (17.57%)	814 (17.86%)
Sex>Marriage>Birth, SMB	4,669 (35.15%)	1,129 (31.52%)	1,851 (35.98%)	1,689 (37.06%)
Sex>Birth>no Marriage, SBnoM	717 (5.40%)	429 (11.98%)	208 (4.04%)	80 (1.76%)
Median age at event (IQR)				
Sex	16 (15, 18)	16 (15, 17)	16 (15, 18)	16 (15, 18)
Birth	18 (16, 21)	18 (16, 19)	19 (17, 21)	18 (16, 21)
Marriage	18 (16, 20)	17 (16, 19)	18 (16, 21)	18 (15, 21)

Modern contraceptive use is generally at 34% among women of reproductive age (15-49 years). However, it is higher among the cohort 2 (middle aged women) at 38% while at 32% in the cohort 1 and 3. The majority of women in Uganda followed the marriage>sex>birth sequence in early life (43%). Also, the majority of women had their first birth after marriage at 78% as observed in the sequences of MSB, and SMB while minority had birth before marriage at 22% i.e. SBM, SBnoM. This pattern is observed across respective cohorts 1, 2, 3. Median Age at first sexual debut (16 years) is the same across all the three cohorts of women. Women in cohort 1 had their first marriage at a slightly younger age of 17 years compared to cohort 2 and 3 who had their first marriage at 18 years.

Table 2: Bivariate analysis of contraceptive use by cohort

	Cohort 1 (1991-2000)		Cohort 2 (1981-1990)		Cohort 3 (1980-1966)	
	Uses modern contraceptives - Yes (n=1142)	P- value	Uses modern contraceptives - Yes (n=5145)	P-value	Uses modern contraceptives - Yes (n=4557)	P- value
Sequence						
Marriage>Sex>Birth	510 (44.7%)	0.009	817 (41.5%)	0.372	645 (43.8%)	0.482
Sex>Birth>Marriage	168 (14.7%)		357 (18.1%)		273 (18.6%)	

	Cohort 1 (1991-2000)		Cohort 2 (1981-1990)		Cohort 3 (1980-1966)	
	Uses modern contraceptives - Yes (n=1142)	P-value	Uses modern contraceptives – Yes (n=5145)	P-value	Uses modern contraceptives – Yes (n=4557)	P-value
Sex>Marriage>Birth	355 (31.1%)		722 (36.7%)		533 (36.2%)	
Sex>Birth>no Marriage	109 (9.5%)		71 (3.6%)		21 (1.4%)	
Religion		0.036		<0.001		<0.001
Anglican	347 (30.39%)		685 (34.82%)		539 (36.62%)	
Catholic	449 (39.32%)		783 (39.81%)		562 (38.18%)	
Muslim	178 (15.59%)		222 (11.29%)		140 (9.51%)	
Pentecostal	149 (13.05%)		215 (10.93%)		190 (12.91%)	
Others	19 (1.66%)		62 (3.15%)		41 (2.79%)	
Place of residence		<0.001		<0.001		0.026
urban	286 (25.04%)		534 (27.15%)		321 (21.81%)	
rural	856 (74.96%)		1,433 (72.85%)		1,151 (78.19%)	
Highest educational level		<0.001		<0.001		<0.001
No education	22 (1.93%)		118 (6.00%)		238 (16.17%)	
Primary	707 (61.91%)		1,135 (57.70%)		937 (63.65%)	
Secondary	363 (31.79%)		509 (25.88%)		191 (12.98%)	
Higher	50 (4.38%)		205 (10.42%)		106 (7.20%)	
Wealth Index		<0.001		<0.001		<0.001
Poor	452 (39.58%)		627 (31.88%)		489 (33.22%)	
Middle	195 (17.08%)		402 (20.44%)		328 (22.28%)	
Rich	495 (43.35%)		938 (47.69%)		655 (44.50%)	
Region		<0.001		<0.001		<0.001
Central	331 (28.98%)		513 (26.08%)		354 (24.05%)	
Eastern	227 (19.88%)		376 (19.12%)		352 (23.91%)	
Northern	287 (25.13%)		486 (24.71%)		358 (24.32%)	
Western	297 (26.01%)		592 (30.10%)		408 (27.72%)	
Marital status		0.015		<0.001		<0.001

	Cohort 1 (1991-2000)		Cohort 2 (1981-1990)		Cohort 3 (1980-1966)	
	Uses modern contraceptives - Yes (n=1142)	P-value	Uses modern contraceptives – Yes (n=5145)	P-value	Uses modern contraceptives – Yes (n=4557)	P-value
Never married	109 (9.54%)		71 (3.61%)		21 (1.43%)	
Married / Cohabiting	890 (77.93%)		1,644 (83.58%)		1,274 (86.55%)	
Widowed	4 (0.35%)		19 (0.97%)		52 (3.53%)	
Separated / Divorced	139 (12.17%)		233 (11.85%)		125 (8.49%)	
Occupation status		0.39		0.010		0.079
Not working	257 (22.50%)		234 (11.90%)		142 (9.65%)	
Domestic work	31 (2.71%)		26 (1.32%)		20 (1.36%)	
Non-domestic work	854 (74.78%)		1,707 (86.78%)		1,310 (88.99%)	
Children ever born		0.026		0.001		<0.001
1-2 children	883 (77.32%)		468 (23.79%)		42 (2.85%)	
>2 children	259 (22.68%)		1,499 (76.21%)		1,430 (97.15%)	
Ever had a terminated pregnancy		0.42		0.003		0.36
No	1,001 (87.65%)		1,584 (80.53%)		1,025 (69.63%)	
Yes	141 (12.35%)		383 (19.47%)		447 (30.37%)	
Sex of household head		0.005		<0.001		<0.001
Male	893 (78.20%)		1,437 (73.06%)		1,060 (72.01%)	
Female	249 (21.80%)		530 (26.94%)		412 (27.99%)	

From the stratified bivariate analysis, there was a significant association of (first sex, birth, marriage) sequences with modern contraceptive use in cohort 1 unlike in cohort 2 and 3 ($p < 0.05$). There was a significant association of occupation status with modern contraceptive use in cohort 2 unlike in cohort 1 and 3. Similarly, there was a significant association of pregnancy termination history with modern contraceptive use in cohort 2 unlike in cohort 1 and 3. All other variables (Religion, place of residence, education status, wealth index, region marital status, total CEB, sex of HH head) were significantly associated with modern contraceptive use across all cohorts ($p < 0.05$).

Table 3: Multivariable analysis of contraceptive use by cohort

	Cohort 1, (15-24)	Cohort 2 (25-34)	Cohort 3 (35-49)
	Odds ratio [CI]	Odds ratio [CI]	Odds ratio [CI]
Sequence			
Sex>Birth>no Marriage, SBnoM	Ref	Ref	Ref
Marriage>Sex>Birth, MSB	1.54** [1.12 - 2.11]	1.02 [0.72 - 1.45]	0.52* [0.30 - 0.92]
Sex>Birth>Marriage, SBM	1.52* [1.07 - 2.17]	1.04 [0.72 - 1.51]	0.51* [0.28 - 0.90]
Sex>Marriage>Birth, SMB	1.36 [0.98 - 1.88]	1.03 [0.73 - 1.46]	0.47** [0.27 - 0.83]
Religion			
Anglican	Ref		
Catholic	1.03 [0.86 - 1.23]	0.91 [0.79 - 1.05]	0.79** [0.68 - 0.92]
Muslim	0.98 [0.77 - 1.23]	0.79* [0.65 - 0.98]	0.62*** [0.49 - 0.79]
Pentecostal	1.09 [0.86 - 1.39]	0.66*** [0.55 - 0.81]	0.77* [0.62 - 0.95]
Others	0.52* [0.31 - 0.88]	0.77 [0.55 - 1.08]	0.74 [0.49 - 1.11]
Place of residence			
urban	Ref		
rural	0.88 [0.72 - 1.08]	0.94 [0.80 - 1.10]	0.99 [0.82 - 1.19]
Highest educational level			
No education	Ref		
Primary	2.79*** [1.76 - 4.44]	2.30*** [1.85 - 2.87]	1.72*** [1.45 - 2.04]
Secondary	3.64*** [2.24 - 5.92]	2.89*** [2.24 - 3.72]	1.86*** [1.44 - 2.41]
Higher	3.86*** [2.12 - 7.05]	3.27*** [2.40 - 4.46]	2.49*** [1.77 - 3.51]
Wealth Index			
Poor	Ref		
Middle	1.12 [0.90 - 1.39]	1.52*** [1.28 - 1.81]	1.18 [0.98 - 1.42]
Rich	1.48*** [1.21 - 1.81]	1.75*** [1.48 - 2.07]	1.47*** [1.23 - 1.76]
Region			
Central	Ref		
Eastern	0.68** [0.54 - 0.86]	0.94 [0.78 - 1.14]	1.08 [0.88 - 1.33]
Northern	0.62*** [0.49 - 0.79]	0.80* [0.66 - 0.96]	0.75** [0.60 - 0.92]
Western	0.85 [0.68 - 1.06]	1.12 [0.94 - 1.33]	0.94 [0.77 - 1.15]

	Cohort 1, (15-24)	Cohort 2 (25-34)	Cohort 3 (35-49)
	Odds ratio [CI]	Odds ratio [CI]	Odds ratio [CI]
Marital status			
Never married	Ref		
Married / Cohabiting	1.07 [0.84 - 1.35]	1.19 [0.98 - 1.45]	2.09*** [1.64 - 2.65]
Widowed/Separated/ Divorced	0.82 [0.26 - 2.62]	0.56* [0.32 - 0.95]	0.68* [0.47 - 0.97]
Occupation status			
Not working	Ref		
Domestic work	0.85 [0.52 - 1.39]	1.19 [0.70 - 2.04]	2.69** [1.39 - 5.21]
Non-domestic work	1.01 [0.84 - 1.20]	1.38*** [1.16 - 1.65]	1.22 [0.99 - 1.52]
Children ever born			
1-2 children	Ref		
>2 children	1.30** [1.08 - 1.56]	1.69*** [1.45 - 1.96]	3.83*** [2.71 - 5.43]
Ever had a terminated pregnancy			
No	Ref		
Yes	0.85 [0.69 - 1.06]	0.82** [0.71 - 0.95]	0.91 [0.79 - 1.05]
Sex of household head			
Male	Ref		
Female	0.81* [0.67 - 0.97]	0.88 [0.76 - 1.02]	0.68*** [0.58 - 0.80]

*** p<0.001, ** p<0.01, * p<0.05

In cohort 1 (younger women), marriage related sequences were associated with modern contraceptive use i.e. OR=1.54** [CI=1.12 - 2.11] for MSB and 1.52* [1.07 - 2.17] for SBM. In cohort 3 (older women), marriage related sequences were associated with modern contraceptive non-use i.e. OR=0.52* [CI=0.30 - 0.92] for MSB, OR=0.51* [CI=0.28 - 0.90] SBM, and OR=0.47** [CI=0.27 - 0.83] for SMB. Of importance to this study, the sequence variable was not significantly associated with modern contraceptive use in cohort 2 (middle-aged women).

The analysis revealed several important socio-demographic and cultural factors influencing contraceptive use across different birth cohorts. A unique finding among Cohort 2 was that pregnancy termination history was significantly associated with a lower likelihood of using modern contraceptives, suggesting distinct socio-cultural dynamics within this group (p<0.05).

Across all cohorts, higher education level, greater number of children ever born (CEB), being employed, being married (versus never married), and higher wealth index were significantly associated with increased likelihood of modern contraceptive use (p<0.05).

Conversely, regional and religious affiliations, being a female household head, and widowhood were linked to a decreased likelihood of contraceptive use ($p < 0.05$).

Discussion

The findings reveal that median ages (years) at first sex (16), marriage (18), and first birth (18) remain consistent across all cohorts, suggesting stable cultural norms and societal expectations around sexuality, marriage, and childbearing in Uganda [10]. However, the influence of early life transitions on modern contraceptive use differs significantly by generation. Among younger women, early life sequences involving marriage are associated with higher modern contraceptive use. This may reflect attempts to space or limit births following early and possibly repeated childbearing experiences [8, 10]. In contrast, among older women, the similar marriage-related sequences are associated with non-use of contraception. This may be due to stable, long-term relationships and perceptions of declining fertility with age, leading to reduced motivation to use contraceptives [6]. Perceptions of declining fertility may include getting close to menopause or reduced sexual activity. Perceptions of declining fertility may stem from approaching menopause or experiencing a decrease in sexual activity. For middle-aged women, early life transitions did not significantly influence current contraceptive use. Instead, pregnancy termination history emerged as a unique factor associated with non-use of modern methods in this category [7,9]. This may reflect fears of medical complications, stigma, or misconceptions about fertility after termination.

Conclusion

The findings highlight how similar early-life course transitions can yield different contraceptive behaviors across birth cohorts, shaped by age, context, and evolving reproductive goals. Therefore, contraceptive messaging should be tailored to each age cohort. Reproductive health education that reflects life transitions in the different birth cohorts can positively shape contraceptive behavior among younger and older women. For middle-aged women, enhancing contraceptive counseling within reproductive health services is crucial to address unique concerns and promote informed decision-making.

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