

Factors associated with fertility intentions among women living with and without human immunodeficiency virus in Zambia

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Abstract

Background: Zambia is one of the countries in sub-Saharan Africa with a high prevalence of human immunodeficiency virus among women of reproductive age. Notably, the literature shows that human immunodeficiency virus status is one of the factors that influence fertility intention among women of reproductive age. With increased access, uptake and coverage of anti retroviral therapy, there is a need to understand the influence of human immunodeficiency virus status on fertility intentions of women of reproductive age in Zambia.

Objectives: The purpose of this study was to determine the fertility intentions of both mothers living with human immunodeficiency virus and mothers living without human immunodeficiency virus in Zambia.

Design: This study adopted a cross-sectional design using data collected by the Zambia Demographic and Health Survey conducted in 2018. The study sample comprised 7983 mothers in the reproductive age (15–49 years), of which 6704 were mothers living without human immunodeficiency virus and 1279 were mothers living with human immunodeficiency virus.

Methods: Here, we determined the fertility intentions of mothers living with human immunodeficiency virus and mothers living without human immunodeficiency virus using secondary data. Multivariable logistic regression models were used to determine the association of individual and household socio-demographic factors on fertility intentions of mothers living with human immunodeficiency virus and mothers living without human immunodeficiency virus in Zambia.

Results: Fertility intention among mothers living with human immunodeficiency virus was 42.1% while that on mothers living without human immunodeficiency virus was 55.5%. Regardless of human immunodeficiency virus status, fertility intention reduced with increasing age. Mothers aged 35–49 years who were living with human immunodeficiency virus (adjusted odds ratio=0.12, 95% confidence interval=0.06–0.24) and mothers aged 35–49 years who were living without human immunodeficiency virus (adjusted odds ratio=0.18, 95% confidence interval=0.13–0.26) had lower odds of intention to have another child compared to mothers aged 15–24 years. Furthermore, married mothers living with human immunodeficiency virus and those living without human immunodeficiency virus had increased odds of intention of having another child (adjusted odds ratio=2.52, 95% confidence interval=1.36–4.66) and (adjusted odds ratio=3.21, 95% confidence interval=2.36–4.36), respectively.

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Conclusion: The study has established that age, marital status, parity and employment status were associated with fertility intention among women living with and without human immunodeficiency virus. The results necessitate the need for enhanced maternal health education for mothers regardless of human immunodeficiency virus status. Furthermore, there is a need for continuous counselling for both women living with human immunodeficiency virus and without human immunodeficiency virus during their routine human immunodeficiency virus care, to improve and enhance pregnancy outcomes.

Keywords

fertility intention, human immunodeficiency virus, reproductive health, women, Zambia

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Introduction

Human immunodeficiency virus (HIV) continues to be a serious public health problem globally affecting the quality of life among the patients. By the end of 2020, approximately 37.7 million people were estimated to be living with HIV around the world^{1–3} while recent studies show that about 24.5 million people were receiving anti-retroviral therapy (ART) as of the end of 2020.^{4,5} In Sub-Saharan Africa (SSA), the burden is more pronounced in women of childbearing age, with four out of every five new infections being reported among women in this group.⁶ In Zambia, the prevalence of HIV as of 2018 was 14.2% among women while it was 7.5% among men.⁷

Advances in HIV research, improved access to ART and care, have transformed HIV into a chronic condition, increasing the survival time of patients.^{8–11} Furthermore, this has increased the desire of the patients to consider parenthood. According to Kodzi et al.,¹² parenthood intentions play an important role in influencing fertility activities of women. Therefore, information relating to fertility intentions is vital for provide insights into the future direction of fertility patterns.^{7,13,14} Furthermore, understanding the fertility intentions of people living with HIV is critical in planning and delivering a responsive reproductive health system as part of a continuum of HIV care in developing countries.^{15,16}

Fertility intention refers to an individual or couple's desire, plans and decisions regarding having another child.¹⁷ The 2018 Zambia Demographic and Health Survey (ZDHS) show that 62% of married mothers had intention to have another child.¹⁸ Emerging evidence indicates that HIV status influences fertility intentions of women of reproductive age (15–49 years).^{19–21} For instance, a study from Kenya found that fertility intentions among women living with HIV (WLWH) was 30%²⁰ while a study from Ethiopia revealed that 42% of WLWH wanted to have another child.¹ On the contrary, Zambia recorded a reduction in the proportion of women of reproductive age who wanted more children from 76% to 62% between 1992 and 2018.^{7,22} However, it remains the highest in the SSA region.^{23–26} Although ART has had a positive influence on

the quality of life among WLWH in Zambia,^{27,28} reproductive assistance among these women remains critical to improve child bearing decisions. In resource-constrained settings, identifying factors that influence fertility intentions among WLWH is important for developing strategies and steering appropriate prevention policies that enhance service delivery and reproductive health among this population. Here, we used nationally representative data coming from the 2018 ZDHS to identify factors that influence fertility intention among both WLWH and mothers living without HIV in Zambia.

Methods and data

Data source

The study was based on secondary analysis of the existing national level data from the 2018 ZDHS programme.¹⁸ The ZDHS is a nationally representative household survey conducted by the Zambia Statistics Agency with support from global partners, including the ICF International and United States Agency for International Development (USAID). A detailed description of the methods used in the surveys is included in reports of Demographic and Health Surveys (DHS) conducted in Zambia.¹⁸ The DHS uses a two-stage cluster sampling design to select enumeration areas (EAs) in the first stage and households in the second stage. The nature of DHS data allows for comparisons between variables over time, thus allowing monitoring of changes in the indicators of variables of interest in different geographical areas. Women aged 15–49 years of selected households who had accepted to participate in the study were also enrolled in the survey. The data analysed in this article relate to women aged 15–49 years. The 2018 DHS captured 13,683 women of reproductive age. For this study, we extracted all relevant variables from the individual woman recode file (IR file) in the 2018 DHS data. The individual recode file was then merged with the HIV data file (AR). All women's data with successful merged HIV status were retained in the data set. Furthermore, all women who reported ever having at least one child ever born and those who had complete information about desire

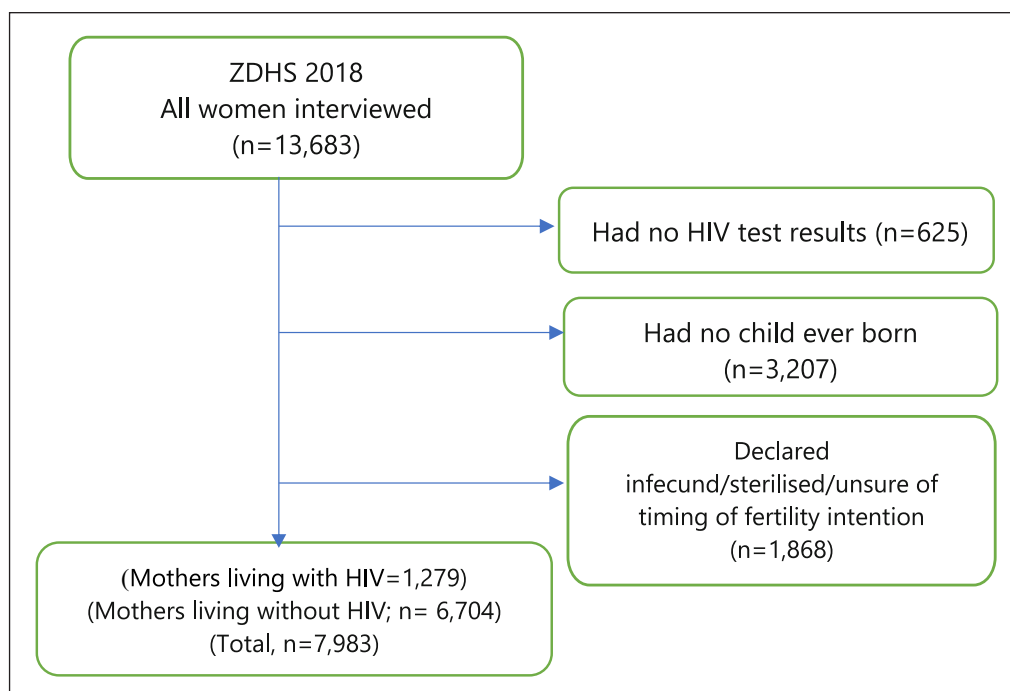


Figure 1. Description of sample derivation criteria.

for more children were included in the analysis. The selection criteria for the analytical sample size are described in Figure 1.

Outcome variable

The outcome variable of interest in this study was fertility intention, which was measured using a question ‘Would you like to have another child, or would you prefer not to have any more children?’ asked to all women in the DHS who had at least reported to have a parity of one. These women were asked if they had intentions of having another child or not. The study included only women who reported having at least one biological child. This is because the concept of fertility intention refers to a decision by a couple or a woman to have another child. Therefore, the intention to have another child was measured only among women who had at least one child. Outcome variable was binary and was coded as ‘1’ for women who had intentions of having another child and ‘0’ for those who had no fertility intentions.

Independent factors

Based on the literature reviewed, we classified the factors that could potentially influence fertility intentions as socio-economic, demographic and individual-level factors.^{19,29–31} The DHS reference materials and data collection forms were used to identify the individual-level independent factors. The predictor variables

included age of woman, which was categorized as (15–24, 25–34 and 35–49 years); current marital status was categorized as (never married, currently married/living with partner and formally married); residence was categorized as (urban, rural); education was classified as (no education, primary, secondary, tertiary); household wealth index was categorized as (poor, middle, rich); parity was classified as (1–3 children, 4–6 children, 7 children and more); contraceptive use was categorized as (not using, using); employment status was categorized as (employed, unemployed) and experience of pregnancy loss was coded as (no, yes).

Statistical analysis

Analysis of data was performed using Stata version 14.2 (StataCorp Inc., College Station, TX, USA) taking into consideration survey design, cluster effect and post-stratification weights. Key socio-economic and demographic factors were described and expressed in frequency and percentage distributions. Exploratory bivariate analysis was carried out to determine the association between the fertility intentions of women and the selected independent variables. A multivariate binary logistic regression model was applied on the data to determine the associations of several individual-level factors on fertility intention in Zambia. Odds ratios with corresponding 95% confidence intervals (CIs) were reported. All independent factors from the bivariate analyses which had *p*-value of less than 0.000 were included in multivariate analysis, regardless of their

Table 1. Percent distribution of background characteristics of mothers living with HIV and mothers living without HIV (15–49 years), 2018 DHS, Zambia (N = 7983).

Background characteristics	Mothers living with HIV (n = 1279) (n, %)	Mothers living without HIV (n = 6704) (n, %)	p
Age (years)			<0.001***
15–24	145 (10.6%)	1839 (27.7%)	
25–34	524 (37.9%)	2495 (37.6%)	
35–49	712 (51.5%)	2310 (34.7%)	
Residence			<0.001***
Urban	896 (64.9%)	2534 (38.1%)	
Rural	485 (35.1%)	4110 (61.9%)	
Education			<0.001***
No education	86 (6.3%)	656 (9.9%)	
Primary	623 (45.1%)	3398 (51.2%)	
Secondary	590 (42.7%)	2265 (34.1%)	
Tertiary	81 (5.9%)	323 (4.9%)	
Wealth index			<0.001***
Poor	298 (21.6%)	2887 (43.5%)	
Middle	233 (16.9%)	1243 (18.7%)	
Rich	850 (61.5%)	2513 (37.8%)	
Marital status			<0.001***
Never married	88 (6.4%)	503 (7.6%)	
Currently married	885 (64.0%)	5376 (80.9%)	
Formerly married	408 (29.6%)	764 (11.5%)	
Parity			<0.001***
1–3	718 (51.9%)	3510 (52.8%)	
4–6	546 (39.6%)	2054 (30.9%)	
7+	116 (8.5%)	1079 (16.3%)	
Employment status			0.1555
Employed	914 (33.8%)	3973 (40.1%)	
Unemployed	467 (66.2%)	2658 (59.9%)	

HIV: human immunodeficiency virus; DHS: demographic and health survey.

*** $p < 0.001$

level of significance. In multivariable logistic regression analysis, variable with $p < 0.05$ were considered to be significantly associated fertility intention. This study followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines, to ensure comprehensive reporting and adherence to methodological standards in the design, analysis and interpretation of the survey data.

Results

Description of characteristics of sampled women

Table 1 shows the distribution of respondents based on the selected background characteristics. Results show that most (51.5%) of the WLWH were in the age group 35–49 years. Among the mothers living without HIV respondents, most (37.4%) were in the age range 25–34 years. In terms of residence, most of the WLWH (64.9%) lived in urban areas. Most (61.9%) of the mothers living without

HIV were living in rural areas. The distribution by education level shows most of the study participants had attained primary regardless of the HIV status. Similarly, results show that regardless of the HIV status, most of the participants had 1–3 children ever born. Furthermore, results show that most of the study participants were unemployed regardless of the HIV status.

Distribution of fertility intentions of mothers living with HIV and mothers living without HIV

Table 2 shows the distribution of fertility intention of WLWH and mothers living without HIV by background characteristics. Overall, the results show that about 42.1% ($n = 582$) of the WLWH had intention of having more children while about 55% ($n = 3687$) of mothers living without HIV had intention of having more children. We further observed that among both WLWH and mothers living without HIV, older women (aged 35–49 years) had lower rates of fertility intention to have more children compared to young mothers (15–24 years). In terms

Table 2. Percent distribution of mother's (15–49 years) fertility intentions by selected demographic and socio-economic characteristics according to HIV status, ZDHS 2018 (N=7983).

Background characteristics	Mothers living with HIV (N=1382)	p	Mothers living without HIV (N=6645)	p
	Want another child (n, %)		Want another child (n, %)	
Age (years)		<0.001***		<0.001***
15–24	121 (83.1%)		1565 (85.1%)	
25–34	306 (58.3%)		1657 (66.4%)	
35–49	156 (21.9%)		465 (20.1%)	
Residence		0.173		<0.05**
Urban	396 (44.1%)		1330 (52.5%)	
Rural	187 (38.4%)		2357 (57.4%)	
Education		<0.001***		<0.001***
No education	27 (31.2%)		272 (41.6%)	
Primary	218 (35.0%)		1756 (51.7%)	
Secondary	297 (50.4%)		1464 (64.6%)	
Tertiary	40 (48.5%)		194 (60.0%)	
Wealth index		<0.05**		0.181
Poor	114 (38.4%)		1690 (58.5%)	
Middle	88 (37.7%)		658 (52.9%)	
Rich	380 (44.7%)		1336 (53.3%)	
Marital status		<0.001***		<0.001***
Never married	49 (55.8%)		327 (65.1%)	
Currently married	456 (51.6%)		3164 (58.9%)	
Formerly married	77 (18.8%)		195 (25.6%)	
Parity		<0.001***		<0.001***
1–3	449 (62.6%)		2750 (78.4%)	
4–6	129 (23.7%)		806 (39.3%)	
7+	3 (2.9%)		131 (12.1%)	
Contraceptive use		<0.001***		0.777
Using	235 (42.7%)		1886 (58.5%)	
Not using	347 (41.8%)		1801 (52.6%)	
Employment status		<0.001***		<0.05**
Employed	362 (39.6%)		2015 (50.7%)	
Unemployed	220 (47.1%)		1659 (62.4%)	
Experienced pregnancy loss		0.307		0.109
No	503 (41.2%)		3293 (55.7%)	
Yes	78 (49.1%)		394 (53.5%)	
Total number of women desiring another child	582 (42.1%)	<0.001***	3687 (55.5%)	<0.001***

HIV: human immunodeficiency virus; ZDHS: Zambia Demographic and Health Survey.

** $p < 0.01$; *** $p < 0.001$.

of residence, 44.1% ($n=395$) of WLWH who wanted more children were from urban areas while among those who were mothers living without HIV, rural areas had more women who wanted more children, 57.4% ($n=2354$). Regardless of the HIV status, it is observed that women with secondary and tertiary education comprised the highest proportions of women wanting more children in the future. The results also showed that 45% ($n=380$) of the women who were WLWH and had intentions of having more children belonged to rich households. On the contrary, 58.5% ($n=1690$) of mothers

living without HIV who belonged to poor households had intention to have more children (Table 2).

Determinants of fertility intention of mothers living with HIV and mothers living without HIV

When we controlled for the covariate in the final multivariate models, we observed that among WLWH, age of a woman, marital status and parity were the predictors of fertility intentions among WLWH. Among mothers living without HIV, age, place of residence, wealth status, marital

Table 3. Multivariable logistic regression analysis of the associations between mother's characteristics and fertility intentions by HIV status, ZDHS 2018 (N=7983).

Background characteristics	Mothers living with HIV		Mothers living without HIV	
	Adjusted odds ratio (AOR)	95% confidence interval	Adjusted odds ratio (AOR)	95% confidence interval
Age (years)				
15–24	1		1	
25–34	0.37**	0.19–0.71	0.68**	0.52–0.88
35–49	0.12***	0.06–0.24	0.18***	0.13–0.26
Residence				
Urban	1		1	
Rural	0.96	0.59–1.56	1.46**	1.14–1.86
Education level				
No education	1		1	
Primary	0.95	0.46–1.98	1.11	0.86–1.41
Secondary	1	0.47–2.14	1.26	0.96–1.65
Tertiary	0.96	0.36–2.53	1.34	0.86–2.09
Wealth quantile				
Poor	1		1	
Middle	0.76	0.43–1.35	0.75**	0.61–0.91
Rich	0.62	0.36–1.09	0.58***	0.45–0.74
Marital status				
Never married	1		1	
Currently married	2.52**	1.36–4.66	3.21***	2.36–4.36
Formerly married	0.50*	0.27–0.95	0.58**	0.38–0.87
Parity				
1–3	1		1	
4–6	0.24***	0.15–0.37	0.22***	0.18–0.27
7+	0.03***	0.01–0.07	0.06***	0.04–0.08
Employment status				
Unemployed	1		1	
Employed	1.07	0.74–1.55	0.98	0.79–1.23
Contraception use				
Not using	1		1	
Using	0.9	0.64–1.28	0.99	0.82–1.19
Experienced pregnancy loss				
No	1		1	
Yes	1.33	0.84–2.10	1.35*	1.07–1.69

HIV: human immunodeficiency virus; ZDHS: Zambia Demographic and Health Survey.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

status and experience of pregnancy loss were associated with their fertility intentions. WLWH aged 25–34 years (adjusted odds ratio (aOR)=0.37, 95% CI=0.19–0.71) and those aged 35–49 years (aOR=0.12, 95% CI=0.06–0.24) had lower odds of desire for more children compared to women aged 15–19 years. WLWH who were married (aOR=2.52, 95% CI=1.36–4.66) were more likely to have intention to have more children compared to the unmarried. WLWH who had 4–6 children (aOR=0.24, 95% CI=0.15–0.37) or 7+ children (aOR=0.07, 95% CI=0.01–0.07) had lower odds of fertility intentions compared to those with 1–3 children.

Results further show that mothers living without HIV aged 25–34 years (aOR=0.68, 95% CI=0.52–0.88) and

those aged 35–49 years (aOR=0.13, 95% CI=0.13–0.26) had lower odds of fertility intention compared to their counterparts aged 15–19 years. In addition, mothers living without HIV from moderate wealth status households (aOR=0.75, 95% CI=0.61–0.91) or rich households (aOR=0.58, 95% CI=0.38–0.87) and with 4–6 children (aOR=0.22, 95% CI=0.18–0.27) or 7+ children (aOR=0.06, 95% CI=0.04–0.08) were less likely to have a desire for more children. Those living in rural areas (aOR=1.46, 95% CI=1.14–1.86), married (aOR=3.21, 95% CI=2.36–4.36) and those who experienced pregnancy loss (aOR=1.35, 95% CI=1.07–1.69) were more likely to have fertility intentions compared to their defined comparison group (Table 3).

Table 4. Multivariable logistic regression analysis of the associations of predictors on fertility intention, ZDHS 2018 (N = 7983).

Background characteristics	Want another child	
	Adjusted odds ratio (AOR)	95% confidence interval
Age (years)		
15–24	1	
25–34	0.59***	0.48–0.72
35–49	0.72***	0.13–0.21
HIV status		
Living without HIV	1	
Living with HIV	0.91	0.68–1.21
Residence		
Urban	1	
Rural	1.36**	1.11–1.68
Education level		
No education	1	
Primary	1.08	0.86–1.36
Secondary	1.21	0.94–1.56
Tertiary	1.26	0.86–1.83
Wealth quantile		
Poor	1	
Middle	0.77**	0.65–0.93
Rich	0.61***	0.48–0.75
Marital status		
Never married	1	
Currently married	3.02***	2.34–3.89
Formerly married	0.59***	0.44–0.79
Parity		
1–3	1	
4–6	0.24***	0.19–0.28
7+	0.067***	0.05–0.09
Employment status		
Unemployed	1	
Employed	1.01	0.87–1.21
Contraception use		
Not using	1	
Using	1.01	0.86–1.19
Experienced pregnancy loss		
No	1	
Yes	1.35**	1.10–1.63

ZDHS: Zambia Demographic and Health Survey; HIV: human immunodeficiency virus.

** $p < 0.01$; *** $p < 0.001$.

Table 4 presents results from the multivariable logistic regression model which included HIV status of a mother as a covariate. We observed that age of a mother, place of residence, marital status, wealth quintile, pregnancy loss and parity were the predictors of fertility intention. Mothers aged 25–34 years (aOR=0.59; 95% CI=0.48–0.72) and those aged 35–49 years (aOR=0.72; 95% CI=0.13–0.21) were less likely to prefer another child compared with mothers aged 15–24 years. Women living in rural areas

(aOR=1.36, 95% CI=1.11–1.68) or those in marital union (aOR=3.02, 95% CI=2.34–3.89) had higher odds of intending to have another child compared to their counterparts. Furthermore, mothers who belonged to households whose wealth status is classified as moderate (aOR=0.77, 95% CI=0.65–0.93) or rich (aOR=0.63, 95% CI=0.48–0.75) had lower odds of intending to have another child compared with mothers from households classified as poor. Regarding parity, mothers who had 4–6 children ever born (aOR=0.24, 95% CI=0.19–0.28) or 7+ children (aOR=0.07, 95% CI=0.05–0.09) had lower odds intending to have another child compared to those with 1–3 children. Mothers who experienced a pregnancy loss (aOR=1.35, 95% CI=1.10–1.63) had higher odds of intending to have another child (Table 4).

Discussion

This study sought to analyse the influence of HIV status on fertility intention of women in Zambia. The study applied multivariable binary logistic regression models on 2018 ZDHS data to better understand the predictors of fertility intentions among women. Overall, the results show age of the mother, place of residence, household wealth status, marital status, parity and experience of a pregnancy loss were associated with fertility intention in Zambia. Forty-two percent of WLWH had an intention to have another child. On the contrary, about 56% of the women living without HIV had an intention to have another child, although there was no significant difference between the groups after controlling for other factors. The distribution by residence shows that 38.4% of WLWH from rural areas compared to 57.4% of WLWH in rural areas. Similarly, results showed that married WLWH (51.6%) compared to (58.9%) of the married mothers living without HIV had intention for another child. However, in terms of comparison by age, the results showed that 21.9% of WLWH in the age group 35–49 years had of intention to have another child compared to 20.1% of the mothers living without HIV.

The results further show that, among both WLWH and mothers living without HIV, fertility intentions reduced with age and parity. In addition, women from wealthy families had reduced odds of fertility intentions regardless of their HIV status. These results have implications for designing of appropriate sexual and reproductive health programmes to enhance access to family planning services, especially among WLWH.

Previously, several studies^{31–34} examined fertility intention among WLWH of reproductive age. To better understand individual-level factors among women, we disaggregated our analyses by a woman's HIV status, given the diverse health service needs and access. Our study established that variations in the factors influencing fertility intention. Fertility intentions among WLWH were

influenced by age, marital status and parity, while among those who were mothers living without HIV, fertility intentions were influenced by age, residence, wealth index, marital status and experience of pregnancy loss. However, results in the final analysis model show that HIV status of mothers did not influence fertility intention in Zambia. Mothers living with HIV had the same fertility intention as that of mothers who were living with no HIV.

We observed that in both WLWH and mothers living without HIV, fertility intentions waned with an increase in age, suggesting the importance of age in determining a woman's reproductive intentions.^{30,35–38} Although no reasons were explored for this, we postulate that maternal health clinics attended by expecting mothers engage in health education related to obstetric and age. Furthermore, studies conducted in SSA suggest that pregnancy in older women such as those aged 35 years and above may have increased risks of negative pregnancy outcomes and obstetric complications such as intrauterine foetal death, pregnancy-induced hypertension and gestational diabetes. This may thus account for the reduction in the fertility intentions with age, as women may be discouraged to engage in childbearing with advance in age.^{39–41} We also postulate that changes in the economic conditions and demands may discourage women from having more children and as they would have reached their intended family sizes thus engage themselves in using contraceptives to reduce the risks of unplanned pregnancies. Our results are consistent with those of other related studies conducted in Malawi, Ethiopia and South Africa that found that fertility intentions among women reduced with age.^{1,13,21,31} Furthermore, our findings also agree with earlier studies which observed that fertility intention reduced by 12.9% among women who had 2–3 children.^{31,42}

Our study findings have also shown that mothers living without HIV in marital union had higher likelihood of fertility intentions compared to mothers who were never married. In the Zambian context, this is due to women trying to respond to family or societal pressure to reach their desire family size. Thus, there is an urgent need to consider implementing community led family planning education programmes championing reproductive behaviour change among women, especially those coming from rural settings where access to reproductive health information could be limited. Furthermore, higher odds of fertility intentions among women from rural areas may be because of limited health education about family planning, unmet needs of family planning or both^{43–47} while traditional demands and cultural beliefs of having larger family may also be the reasons for higher odds of fertility intentions among mothers living without HIV in rural areas. Our findings are in agreement with findings of Ahinkorah et al.⁴⁸ and Ewemojje et al.,⁴⁹ which also found that women living in rural areas were more likely to have a desire for more children than their counterparts living in

urban areas. This could be because of strong cultural and social norms that emphasize the importance of large families and view childbearing as a central aspect of wealth in rural settings.

Consistent with SDG (Sustainable Development Goal) 3, which seeks to ensure healthy lives and promote well-being of women,^{50,51} our findings show the need to enhance reproductive health education among women of reproductive age in Zambia, especially women of childbearing age. Although fertility intentions of WLWH in Zambia appeared lower in univariate analysis than when compared to their counterparts who are mothers living without HIV, this finding did not remain significant after adjusting for other factors. Regardless, the proportion of WLWH who still have a desire for more children is considerably high. Strengthening maternal health education targeted at adolescents and young WLWH is key to further reduce the risk of mother-to-child transmission of HIV in the country.⁵² Therefore, understanding issues relating to knowledge of WLWH regarding prevention of mother-to-child transmission of HIV and their access to reproductive health services is key in informing strengthening family planning policy to address of high fertility intention among WLWH with varied reproductive health needs.

Given that the ZDHS data were collected through cross-sectional design, the analysis done on the data can only permit measurement associations between some independent variables and the outcome variable of interest. As a result, it is important to note that only associations were investigated in this study, and no attempt was made to determine whether there was a causal relationship. There could be a variety of other factors that influence fertility intentions among WLWH and mothers living without HIV such as cultural beliefs or social norms. For example, the reasons why WLWH still wanted to have children despite living with HIV could not be answered due to lack of qualitative variables in ZDHS data set. Furthermore, the ZDHS did not apply power analysis to select samples of WLWH and women living without HIV. Thus, the sample sizes may not be sufficient to detect real differences in fertility preference. Nevertheless, the DHS being a nationally representative is robust to produce findings that can be generalized to a wider population of women of reproductive age in Zambia. The evidence generated by this study is important to inform strengthening sexual reproductive health programmes aimed at improving maternal health in Zambia.

Conclusion

The study has established that among WLWH age, marital status and parity were significantly associated with fertility intention. On the contrary, age, place of residence, marital status and wealth quintile were the determinants of fertility intention among mothers living without HIV.

HIV status in women of reproductive age is a crucial factor in determining the fertility intentions among women of reproductive age. Understanding diverse factors that determine women's fertility intentions may be useful in orienting policy towards effective and suitable strategies for contraception, safer conception, and pregnancy planning. Furthermore, strengthening the Prevention of Mother-to-Child Transmission of HIV (PMTCT) health education through family planning clinics and community health workers is important for improving maternal and child health.

Declarations

Ethics approval and consent to participate

Permission to use the 2018 ZDHS data set was granted by the DHS Program. The information on ethics approval number is not available by the DHS Program. However, the same data set has been widely used for research by other scholars. The 2018 ZDHS data set can be freely sourced from the website <https://dhsprogram.com/>. The DHS data set has no identifiers and there were no anticipated risks to participants because there was no direct contact. All protocols for 2018 ZDHS were approved by the Tropical Disease and Research Center (TDRC) in Zambia and the Research Ethics Review Board of the Center for Disease Control and Prevention (CDC) Atlanta. The data collection for 2018 ZDHS was carried out in line with provisions in the study protocols. No data collection took place prior to obtaining informed consent. The written informed consent/assent was read to all eligible individuals and contained all of the information required to make an informed decision as to whether or not to participate. All participants were required to sign the consent forms before proceeding with the interview. Written consent was obtained from participants 18 years and older. For participants' age 15–17 years, permission was obtained from their parent or guardian before proceeding to get written assent from the adolescents. In cases where the parent or guardian did not give permission to proceed, the adolescent was excluded from the survey.

Consent for publication

Not applicable.

Author contribution(s)

David Mulemena: Conceptualization; Data curation; Formal analysis; Writing – original draft.

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Competing interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of data and materials

Data used in the study are publicly available on the DHS Program website (<https://dhsprogram.com/>). Other materials such as do-files can be provided upon request to the corresponding author.

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Supplemental material

Supplemental material for this article is available online.

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