

Home Birth in Rural Zambia: The Role of Intimate Partner Violence and Autonomous Decision-Making

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Introduction: Skilled care is indicated as a measure to prevent the deaths of pregnant women across sub-Saharan Africa. Despite this, many women continue to give birth at home. There has been little attention as to how the experience of intimate partner violence (IPV) or autonomous decision-making about place of birth influences home births in rural Zambia. This study explores how markers of sociocultural gender inequities (prevalence of IPV and autonomous decision-making) correlate with home birth in rural Zambia.

Methods: This secondary analysis uses quantitative data from a baseline household survey with women who had given birth within the past 13 months in rural Zambia. Control variables shown to be significant in the literature were included in the model, and binary logistic regression was used to assess the influence of IPV and autonomous decision-making on home birth.

Results: This sample included 2381 women from rural Zambia, of whom 384 reported a home birth within the past 13 months. Women who were autonomously making the decision about where to give birth were more likely to have a home birth (adjusted odds ratio [AOR], 1.729; SE, 0.210; 95% CI, 1.362-2.194; $P < .001$). Self-report of experiencing physical IPV in the past 2 weeks was not significant in predicting home birth (AOR, 0.783; SE, 0.181; 95% CI, 0.496-1.234; $P = .293$). Women who self-identified as Tumbuka or other, were able to afford school fees, had completed secondary education or higher, were married, and had 4 or more antenatal care visits were significantly less likely to report a home birth.

Discussion: This quantitative analysis did not corroborate findings from other research that implicates IPV as a predictor of home birth. Additionally, autonomous decision-making was not associated with a decrease in home births. Future work should incorporate qualitative or mixed methods strategies to comprehensively explore household- and facility-level interventions to promote facility birth.

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INTRODUCTION

Despite a reduction in maternal mortality by 50% over the past 30 years, pregnancy-related deaths continue to be an urgent problem globally.^{1,2} In sub-Saharan Africa, a woman's lifetime risk of maternal mortality is 1 in 36, in contrast to the risk in high-income countries estimated at 1 in 4900.¹ Deaths may in fact be much higher, as data regarding maternal mortality are difficult to collect in countries with poor health

information infrastructure.³ Building on the progress of the Millennium Development Goals, the Sustainable Development Goals specifically address the need to eliminate this health disparity with the 2030 benchmark set at no country exceeding 70 deaths per 100,000 births.^{2,4}

The evidence is clear that access to skilled care prior to, at the time of, and after birth can prevent death and disability.¹ Pragmatically, the response in sub-Saharan Africa has been to focus on improving rates of facility-based birth.¹ However, challenges remain in improving access to care because of multifaceted sociocultural factors and infrastructure issues.^{1,3,5} Research indicates that the expansion of maternal health service use, including institutional birth, requires complex interventions that simultaneously address access to education, poverty elimination, and women's empowerment.⁶

Empowerment is a challenging construct to measure with no common consensus on the most useful measurement indicators.^{7–9} Reflecting the growing trend of gender-transformative interventions and research, maternal health choices and behaviors are more thoroughly understood when analyzed within the broader sociocultural context and family system.^{5,10} Gender-transformative analysis is crucial in the evaluation of how entrenched gender inequities, including intimate partner violence (IPV) and lack of autonomous decision-making, may influence the risk of home birth. Centered in power and control, IPV is known to decrease women's autonomy and has been inversely correlated with health-seeking behaviors and maternal health service use globally,^{11–14} but it has not been regularly explored as a variable in relation to home birth. Autonomy in household

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Quick Points

- ◆ Home births in rural Zambia persist, despite efforts to increase facility birth, placing women and girls at higher risk of preventable mortality.
- ◆ There is a lack of research using quantitative data in rural Zambia exploring how intimate partner violence and autonomous decision-making influence home births.
- ◆ Self-report of experiencing physical intimate partner violence was not significant in predicting home birth.
- ◆ Women in rural Zambia who reported autonomous decision-making on where to give birth were more likely to have a home birth.

decision-making has been used as a proxy for empowerment in a variety of studies but has yet to yield consistent results in direct relation to home birth through quantitative analysis.^{5,6,10}

Zambia

Zambia is a landlocked country in sub-Saharan Africa that endured European colonialism in the 18th century and regained independence in 1964.¹⁵ Despite being land rich in mineral resources, legacies of colonialism and corruption have decreased the economic well-being of Zambian citizens.¹⁵ In rural areas, 78% of the population live in poverty, living without access to income, opportunities, employment, shelter, and other basic needs.¹⁶ Health infrastructure in Zambia is centralized in urban areas, leaving rural Zambians at high risk for morbidity and mortality with excessive time and travel costs to obtain health care.¹⁷ There are 72 distinct ethnicities in Zambia with varied cultural practices and beliefs that influence health choices and behaviors, some health promoting, and some, like favoring education of boys over girls, childhood marriage, or gender inequities in the home, that disfavor health and well-being for all.¹⁸

In Zambia, there is a need to understand which women continue to give birth at home, as every year 252 per 100,000 women and girls die because of pregnancy- and childbirth-related complications.¹⁸ Data from the 2018 to 2019 Zambian Demographic Health Survey (DHS) indicate regional differences in facility births by province, echoing findings from earlier surveys indicating that women's economic status and level of education influence place of birth.¹⁸ Health infrastructure for rural communities is centered around health posts and rural health centers, with some rural health centers able to provide basic emergency obstetric and newborn care.¹⁹ Following a policy eliminating user fees in 2006, these fees are not customary for rural facility births, yet there are costs associated with leaving family and work at home undone, transportation, and obtaining supplies required for birth.^{17,20}

Of the 73.8% of women who give birth in Zambian health facilities, only 25.8% of these births occur in facilities equipped to provide basic emergency obstetric and newborn care, and only 1.2% of births happen in facilities fully equipped to provide comprehensive emergency obstetric and newborn care.¹⁹ Challenges remain in care provision, as many basic and comprehensive emergency obstetric and newborn care facilities are not fully functioning, with less than half providing

all signal functions (ie, parenteral antibiotics, oxytocin, anticonvulsants; manual removal of placenta; removal of products retained after birth; assisted vaginal birth; newborn resuscitation; blood transfusion; cesarean birth).¹⁹ The use of traditional birth attendants (TBAs) to assist with home births in Zambia was banned by the Zambian government in 2010 as they were viewed as contributors to high rates of maternal mortality.²¹ However, women in rural areas continue to give birth with TBAs' and/or family members' assistance because of sociocultural preferences, women's lack of decision-making autonomy, and a variety of physical and socioeconomic barriers.²² Most TBAs in rural Zambia were incorporated into the Ministry of Health's volunteer training of Safe Motherhood Action Groups as one part of a Safe Motherhood initiative in 2003, with the aim of providing accurate information and support to pregnant women to reduce delays in seeking facility-based maternal health services.^{23,24}

The public-private partnership Saving Mothers Giving Life (active from 2012 to 2017), then incorporated Safe Motherhood Action Groups into their mission to decrease maternal mortality using a health-systems-focused approach.^{24,25} The Saving Mothers Giving Life initiative focuses on the 3 delays (seeking care, reaching care, and receiving care) that contribute to maternal and perinatal mortality using interventions such as community mobilization via Safe Motherhood Action Groups as well as maternity waiting homes to promote facility access.²⁵ *Maternity waiting homes* are structures located near a health facility that provide women a place to stay before or after giving birth to address the first 2 delays: seeking care and then reaching the health facility. Thus far in Zambia, the Saving Mothers Giving Life agenda has resulted in a 55% decrease in maternal mortality, a 43% increase in use of facilities for birth, and a doubling of facilities that consistently perform all signal functions constituting basic emergency obstetric and newborn care in districts included in phase 1.^{24,25}

Zambia's health policies have long reflected the need for equity in access to quality, cost-effective care for all citizens.¹⁹ Yet, challenges remain in the delivery of high-quality maternal care, especially for rural Zambian women.²⁶ Common findings from research on this topic include poor quality of care, disrespect, or discrimination at the health facility.^{27,28} Zambian women report being turned away from care or treated with disrespect when it was discovered they had given birth at home.²⁷ Older Zambian women have expressed discomfort in laboring with young and/or male nurses, preferring to labor at home with TBAs, who often lack training and supplies for emergencies in labor and birth.²⁷

The Zambian DHS (2013-2014) suggests married women (48%) and those who have children (45%-51%) are at higher risk for IPV.¹⁶ An analysis of Zambian DHS data (2013-2014) found no significant relationship between IPV and use of maternal health services (antenatal care, skilled attendance at birth, facility birth).²⁹ The influence of IPV on home births has not been recently evaluated in Zambia, despite evidence that suggests IPV influences maternal health behaviors and outcomes.¹²⁻¹⁴

Autonomous decision-making about place of birth is not included in the Zambian DHS to evaluate factors influencing home birth, yet autonomous decision-making has been positively correlated with use of maternal health services.¹⁰ There is no current research examining the impact of IPV or autonomous decision-making on location of birth, specifically on home births, in rural Zambia. Given that IPV is centered on power and control, it is reasonable to expect that women experiencing IPV would have less power in autonomous decision-making about where to give birth and be more likely to have a home birth.

The overall goal of this research is to explore how markers of sociocultural gender inequities (self-report of IPV and autonomous decision-making) affect home birth in rural Zambia. Specifically, we sought to assess the association between IPV and home birth and women's autonomous decision-making about location of birth and home birth among women in rural Zambia.

METHODS

This is a secondary analysis of quantitative household survey data collected at baseline prior to a maternity waiting home intervention being implemented in 40 primary health facility catchment areas within 7 rural Zambian districts.³⁰ Ethical approval for the household survey was obtained from the Boston University Institutional Review Board, the University of Michigan Institutional Review Board, and the ERES Converge Research Committee in Zambia.³⁰ Baseline data were collected between April and May of 2016 in Choma, Kalomo, and Pemba districts in Southern Province; Nyimba and Lundazi district in Eastern Province; and Mansa and Chembe districts in Luapala Province. These districts were all targeted by the Saving Mothers Giving Life initiative beginning in 2012, which included (1) community mobilization, (2) infrastructure development to improve transport, and (3) strengthening health facilities to manage labor complications and improve quality of care.³¹ The initial phase of Saving Mothers Giving Life in 2012 targeted Chembe, Kalomo, Lundazi, Mansa, and Nyimba districts. The districts of Pemba and Choma were added in 2015 as a part of the Saving Mothers Giving Life phase 2 intervention.³¹

Data Collection

Quantitative data collected through the baseline household survey included information regarding household and individual demographics, decision-making regarding labor and birth health care practices, perceived quality of care received at health facilities regarding labor and birth, barriers to accessing facilities for birth, and maternal health service utilization. All

variables in the sample were collected as categorical variables. The primary outcome of home birth was delineated through the woman's response about where she had given birth to her last (within the past 13 months) child. The primary outcome variable was dichotomized to reflect whether a woman had given birth to her most recently born child at home (her home or someone else's home) or elsewhere, which included a hospital, a health post or facility, or along the road on the way to the facility. The sample included women living in very rural and remote areas in Zambia. Households were included in data collection that were more than 10 kilometers from their assigned health center and randomly sampled with randomization occurring at the village, household, and level of the individual woman.³⁰ Sampling strategy details have been reported elsewhere.³⁰

The 2 physical IPV variables in the parent data set used behaviorally specific questions to ascertain if participants had been (1) "pushed, shoved, slapped by husband or partner in past 2 weeks" and/or (2) "kicked, dragged, beat, choked, burned by husband or partner in past 2 weeks." Response options to the IPV questions ranged from "Never" to "Almost Always." These questions were collapsed to create a dichotomized variable of having experienced violence of any kind over the past 2 weeks at least once (yes or no).

There were 2 decision-making questions in the parent study that asked about place of birth. Specifically, the first question asked participants, "Who was the primary decision maker of you delivering in a facility?" with 7 response options, including yourself, husband or partner, mother or mother in law, auntie, other family member, friend, and other. The second question asked, "Who was the primary decision maker of you delivering at home?" We combined responses to these 2 questions to create one variable that elucidated whether the pregnant woman perceived herself to have made the decision autonomously about where she gave birth regardless of the location. Accordingly, the responses focus specifically on whether the pregnant woman made the decision about where to give birth or if someone else made or contributed to the decision about where she gave birth.

Individual sociodemographic control variables included marital status, gravida, parity, ability to pay children's school fees (used as a proxy for wealth), number of antenatal care (ANC) visits with last pregnancy, age, level of formal education, and ethnicity or tribe. Sociodemographic factors were selected for the model based on past research in which they have been found to be significant predictors of home birth in sub-Saharan Africa.^{16,26,28,31-34} The following variables were dichotomized: (1) ability to pay children's school fees was dichotomized into yes (yes, usually, sometimes) or no (rarely, no, other); (2) number of ANC visits with last pregnancy was dichotomized into fewer than 4 (fewer than the World Health Organization recommendation) or 4 or more (consistent with the World Health Organization recommendation before 2016).¹⁹ This decision was made with the knowledge that only 0.6% ($n = 14$) of the mothers indicated no ANC visits and only 3.0% ($n = 71$) of the mothers indicated only one ANC visit. The following 6 control variables were collapsed to represent no more than 3 categories: age, gravida, parity, and level of formal education. Ethnicity was collapsed to include 4 categories (Tonga, Bemba, Tumbuka, other) because of the

small count in a few (Chewa/Ngoni, Nsenga, Aushi, other) of the categories collected.

Analysis

All quantitative data analyses were conducted using SPSS version 25; all *P* values were set at .05. Descriptive statistics of the participants were calculated for the full study sample. Cross tabulations were used to assess the dichotomized or collapsed variables for completeness with the original variables in the data set. Reference categories were chosen based on those with the highest number of responses. Descriptive data (count, frequencies) are presented for all variables included in the model in Table 1. Finally, multivariable logistic regression models used listwise deletion to handle missing values because of the small percentage of missing data across the items included in our model. Only 43 respondents were removed because of missing data on at least one of the items used in the analysis (1.8% of the sample was removed).

RESULTS

Of the 2381 women included in the sample, 384 (15.3%) women reported giving birth to their most recent child at home. The overall prevalence of reported physical IPV in the prior 2 weeks was 8.1%, representing 192 women. Of the women in the full sample who had home births for their most recent birth, 48.4% (*n* = 176) reported being the primary decision maker about where to give birth. As indicated in Table 1, respondents who reported home births for the birth of their last child were more likely to be pregnant 6 or more times (32.4%), have 6 or more children (36.8%), be older (38.7% aged 25-34 years and 19.6% ≥35 years), have completed no formal education (20.3%), and identify with the Tonga tribe (ethnicity) (52.7%).

The results of the logistic regression indicate that women who were making the decision about where to give birth were more likely to have a home birth (adjusted odds ratio [AOR], 1.729; 95% CI, 1.362-2.194). Self-report of experiencing physical IPV in the past 2 weeks was not significant in predicting home birth (AOR, 0.783; 95% CI, 0.496-1.234). Ethnicity was significant in our final model, with women self-identifying as Tumbuka (AOR, 0.283; 95% CI, 0.188-0.426) or other (AOR, 0.076; 95% CI, 0.036-0.641) less likely to report a home birth. Women reporting the ability to pay their children's school fees were less likely to report a home birth (AOR, 0.757; 95% CI, 0.593-0.966), as were those who indicated having completed secondary education or higher (AOR, 0.573; 95% CI, 0.384-0.856). Married women (AOR, 0.644; 95% CI, 0.442-0.937) and those who obtained 4 or more ANC visits during their last pregnancy (AOR, 0.455; 95% CI, 0.359-0.576) were all significantly less likely to report a home birth for the birth of their last child. See Table 2 for the full results of the logistic regression.

DISCUSSION

This secondary analysis assessed sociocultural markers of gender inequities in a sample of women in rural Zambia to explore their correlation with home birth. Self-report of experiencing physical IPV at least once over the 2 weeks prior

to the household survey did not significantly influence home birth. Women's autonomous decision-making about the place of their child's birth (born within the past 13 months) was positively correlated with home birth.

Inconsistent with higher national averages of home birth (31%) from DHS data (2013-2014) regarding rural women, 15.3% of women had given birth to their most recent child at home in our sample, likely explained by the broad effects of both the Safe Motherhood program and the Saving Mothers Giving Life initiative.^{16,27,28,32} However, consistent with research exploring factors influencing maternal health service use in Nigeria, ethnicity overall was significant in the final model, with women from certain ethnicities more or less likely to have experienced a home birth.³³ Although ethnicity may reflect distinct cultural preferences affecting birth location, in this sample ethnicity also appeared inherently tied to district which may have reflected regional differences in availability and distance to services that cannot be discounted. Consistent with qualitative research in Zambia and quantitative and mixed methods research in other sub-Saharan African countries, socioeconomic status, education, marital status, and the number of ANC visits were all negatively correlated with home birth.^{5,19,26,33-38}

In contrast with findings elsewhere, IPV was not significantly correlated with increased risk of home birth. Despite the lack of significance in findings, further investigation into the impact of IPV on home births is warranted in Zambia given strong evidence for its association in similarly resource-poor settings and the regional nature of this sample.¹⁴ As researchers increasingly move toward the use of direct indicators of women's autonomy that are observable in the home, experiences of IPV may represent a useful proxy if combined with multiple dimensions of autonomy. There are known improvements in the use of reproductive health services and health outcomes in sub-Saharan Africa related to IPV. However, few studies outside of South Asia have examined the relationship between autonomy and IPV with conflicting results.^{1,39} A general expansion of research on IPV in correlation with multiple dimensions of women's autonomy in sub-Saharan African countries is warranted because of contradictory results within existing research. Understanding the relationship between autonomy and IPV and how this affects reproductive health service use and outcomes requires further investigation. Using qualitative and mixed methods approaches as well as exploring different forms of IPV (physical, sexual, emotional, economic) would deepen understanding of this complex and understudied topic.

The results of this study indicate that autonomous decision-making about the place of birth is positively correlated with home birth. There are conflicting reports in the research about autonomous decision-making and its correlation with home birth. This quantitative analysis is in contrast to the findings of several qualitative studies in Zambia examining barriers to use of facilities for birth, including lack of women's decision-making autonomy.^{22,37} The results of this analysis may be explained by research that indicates that multiparous women in Zambia who have experienced an uneventful birth express confidence in being able to give birth to their subsequent children at home.³⁷ Alternative explanations may be warranted, as research in Mali found

| Table 1. Characteristics of Participants in Rural Zambia Who Gave Birth Within the Past 13 Months, N = 2381 | | | |
|--|---------------------|-------------------------|-------------------------------------|
| | Total Sample | Home Birth | Not a Home Birth^a |
| | N = 2381 | n = 384 | n = 1997 |
| | n (%) | n (%) | n (%) |
| Physical IPV and Decision About Place of Birth | | | |
| Ever experienced physical IPV in past 2 weeks: | 192 (8.1) | 25 (6.9) | 167 (8.4) |
| At least once | | | |
| Control of decision-making about place of birth: Pregnant woman herself | 861 (36.2) | 176 (48.4) ^d | 685 (34.1) ^d |
| Maternal Sociodemographic Characteristics | | | |
| Marital status: married or cohabitating | 2092 (88.0) | 314 (86.3) | 1774 (88.3) |
| Parity | | | |
| One child | 508 (21.4) | 39 (10.7) ^d | 467 (23.2) ^d |
| 2-5 children | 1263 (53.1) | 191 (52.5) ^d | 1070 (53.2) ^d |
| ≥6 children | 608 (25.6) | 134 (36.8) ^d | 473 (23.5) ^d |
| Gravida | | | |
| First pregnancy | 551 (23.2) | 46 (12.6) ^d | 503 (25.1) ^d |
| Second to fifth pregnancy | 1315 (55.4) | 200 (54.9) ^d | 1112 (55.5) ^d |
| Sixth pregnancy or more | 507 (21.4) | 118 (32.4) ^d | 389 (19.4) ^d |
| Perceived ability to pay children's school fees: | 1438 (60.5) | 200 (54.9) ^e | 1237 (61.5) ^e |
| Yes | | | |
| Number of ANC visits at a health facility for previous pregnancy | | | |
| 0-3 | 982 (41.4) | 210 (57.7) ^d | 772 (38.4) ^d |
| ≥4 | 1392 (58.6) | 154 (42.3) ^d | 1236 (61.6) ^d |
| Age, y | | | |
| 15-24 | 1187 (50.0) | 151 (41.7) ^d | 1032 (51.5) ^d |
| 25-34 | 836 (35.2) | 140 (38.7) ^d | 694 (34.6) ^d |
| ≥35 | 349 (14.7) | 71 (19.6) ^d | 278 (13.9) ^d |
| Level of formal education | | | |
| None | 362 (15.2) | 74 (20.3) ^f | 287 (14.3) ^f |
| Primary, partial or completed | 1444 (60.8) | 220 (60.4) ^f | 1220 (60.8) ^f |
| Secondary, partial or completed | 568 (23.9) | 70 (19.2) ^f | 498 (24.8) ^f |
| Tribe (ethnicity) | | | |
| Tonga | 960 (40.3) | 192 (52.7) ^d | 767 (38.2) ^d |
| Bemba | 386 (16.2) | 74 (20.3) ^d | 309 (15.4) ^d |
| Tumbuka | 495 (20.8) | 33 (9.1) ^d | 462 (23.0) ^d |
| Other | 539 (22.6) | 65 (17.9) ^d | 472 (23.5) ^d |

Abbreviations: ANC, antenatal care; IPV, intimate partner violence.

^a Participant reported giving birth at a hospital, health post or facility, or along the road on the way to a facility.

^b Defined as pushed, shoved, slapped, kicked, dragged, beaten, choked and/or burned by husband or partner in past 2 weeks.

^c Participant identified if she made the decision herself about where to give birth, or if someone else (husband/partner, elder, mother, mother-in-law, friend, other) made the decision about where to give birth for her most recent pregnancy.

^d Difference is statistically significant at the .001 alpha level using a chi-square test of independence.

^e Difference is statistically significant at the .05 alpha level using a chi-square test of independence.

^f Difference is statistically significant at the .01 alpha level using a chi-square test of independence.

institutional births to be correlated with women who had higher perceptions of their self-efficacy in addition to the influence of the mother-in-law's perceptions of their son's authority in decision-making.¹⁰

Regardless of individual autonomy, women and community members will interface with health systems across their lifespan. Ensuring strong health care infrastructure and high

quality of care is necessary to encourage acceptance and continued use of these services.^{38,40} It is possible that women with high levels of autonomy in this sample declined to have institutional births because of previous poor experiences at the health facility; indeed, care perceived as disrespectful or of poor quality has been well documented in the literature on Zambia.^{35,41,42}

| Table 2. Logistic Regression: Predicting Home Birth in Rural Zambia (N = 2338)^a | | | |
|---|-----------------|----------------|---------------|
| Independent Variable | AOR (SE) | P Value | 95% CI |
| Physical IPV and Decision About Place of Birth | | | |
| Physical IPV | | | |
| No physical IPV reported | — | — | — |
| Experience of physical IPV ^b at least once | 0.783 (0.181) | .293 | 0.496-1.234 |
| Autonomous decision-making about place of last birth | | | |
| Someone else decided | — | — | — |
| Woman decided herself | 1.729 (0.210) | <.001 | 1.362-2.194 |
| Maternal Sociodemographics | | | |
| Tribe (ethnicity) | | | |
| Tonga | — | — | — |
| Bemba | 0.859 (0.140) | 0.353 | 0.624-1.183 |
| Tumbuka | 0.283 (0.058) | <.001 | 0.188-0.426 |
| Other | 0.464 (0.076) | <.001 | 0.336-0.641 |
| Ability to afford school fees | | | |
| No | — | — | — |
| Yes | 0.757 (0.094) | .025 | 0.593-0.966 |
| Level of formal education | | | |
| None | — | — | — |
| Primary, partial or completed | 0.739 (0.119) | .062 | 0.538-1.014 |
| Secondary, partial or completed | 0.573 (0.117) | .007 | 0.384-0.856 |
| Age | | | |
| 15-24 | — | — | — |
| 25-34 | 0.841 (0.135) | .284 | 0.613-1.153 |
| ≥35 | 0.906 (0.211) | .674 | 0.573-1.432 |
| Marital status | | | |
| Unmarried | — | — | — |
| Married or cohabitating | 0.644 (0.123) | .022 | 0.442-0.937 |
| Gravida | | | |
| One pregnancy | — | — | — |
| 2-5 pregnancies | 1.683 (0.765) | .252 | 0.690-4.103 |
| ≥6 pregnancies | 2.132 (1.142) | .158 | 0.746-6.093 |
| Parity | | | |
| One child | — | — | — |
| 2-5 children | 1.383 (0.593) | .450 | 0.596-3.206 |
| ≥6 children | 1.741 (0.887) | .276 | 0.641-4.729 |
| Number of times ANC received at health facility during last pregnancy | | | |
| 0-3 ANC visits | — | — | — |
| >4 ANC visits | 0.455 (0.054) | <.001 | 0.359-0.576 |

Abbreviations: ANC, antenatal care; AOR, adjusted odds ratio; IPV, intimate partner violence.

^aMultivariable logistic regression models used listwise deletion to handle missing values. Forty-three respondents (1.8% of the sample) were removed because of missing data on at least one of the items used in the analysis.

^bDefined as pushed, shoved, slapped, kicked, dragged, beaten, choked and/or burned by husband or partner in past 2 weeks.

^cParticipant identified if she made the decision herself about where to give birth, or if someone else (husband/partner, elder, mother, mother-in-law, friend, other) made the decision about where to give birth for her most recent pregnancy.

Women in rural Zambia are at heightened risk for pregnancy and birth complications that may result in death when they give birth outside a facility. IPV, associated with power and control at the intrahousehold level and indicated as a barrier to facility birth elsewhere, did not appear to influence home births in our sample.¹⁴ However, any incidence of IPV is unacceptable and requires further investigation as a well-established public health risk.¹² Although IPV is known to potentially account for a proportion of maternal deaths, this knowledge is rarely translated into policy.⁴³ In rural Zambia, 47% of women aged 15 to 49 years report having ever experienced physical violence, and over half (52%) report never telling anyone or seeking help.¹⁹ The Zambian government has introduced 2 national policies within the past 10 years addressing gender-based violence and gender equity, yet national prevalence of IPV has had minimal decreases (43% overall prevalence in 2013-2014, 36% in 2016-2017).^{16,19} Intentional policy regarding IPV and consistent screening by clinicians has been suggested as a promising strategy but has yet to be implemented in Zambia.⁴⁴

The 2014 National Gender Policy established by the Ministry of Gender and Child Development specifically addresses the need to promote women's autonomy and involvement in decision-making.⁴⁵ This analysis indicates that women who were autonomously making the decision about where to give birth were more likely to have a home birth. However, the National Gender Policy in Zambia focuses on leadership positions and all levels of development in the public and private sectors, and a focus on promoting change for women at the household or community level remains absent.

To promote institutional birth, with the goal of eliminating preventable maternal deaths, it is necessary to further clarify the role of IPV and autonomous decision-making regarding place of birth in rural Zambia. Although the need for advancing women in leadership positions across public and private sectors of development is unequivocally important, women and girls at the individual and community levels in rural Zambia must not be forgotten.

This research has several limitations. First, there is potential for recall bias, as we asked women to discuss the decision-making process around an event that occurred up to 13 months prior. Data collection did not include objective measures such as cards obtained at the facility during institutional birth or ANC, which may have removed this bias. In addition, although we collected data to determine the intention around place of birth, the response of "health facility" was nearly universal. It seems that social desirability bias influenced these responses, and because of this that variable was not useful for this analysis. The majority of studies investigating IPV and maternal health service utilization include multiple questions regarding all forms of IPV (emotional, sexual, physical, economic) across a time frame of 12 months.¹⁶ Our data draw on questions that focus only on physical violence and limit the time frame in question to over the past 2 weeks, which narrows our ability to more comprehensively understand IPV occurring in this population and its impact on home birth. In addition, the sensitive nature of this topic as well as prevailing sociocultural norms regarding IPV may have influenced the responses regarding experiences of IPV. Despite training of data collectors, many of whom had

conducted prior IPV surveys, we cannot discount the potential influence of the mix of male and female data collectors on willingness to disclose information about IPV. Finally, the use of quantitative data alone to evaluate measures of women's autonomy may be limiting our understanding of this concept that has a wide variety of associations with maternal health service use in sub-Saharan Africa.

CONCLUSION

This secondary analysis of a large cross-sectional data set from rural Zambia did not find a correlation between self-report of physical IPV and homebirth, yet found that women who reported autonomously making the decision about where to give birth were more likely to give birth at home. A further realization of Zambia's commitment to gender parity could include clear messaging about the measurement and evaluation of decision-making at the individual and household levels beyond purely quantitative DHS measures. At the household level, future work should incorporate qualitative or mixed methods analyses to expand our understanding of the correlation between individual decision-making and home birth in rural Zambian women. Future work that provides midwives with tools and infrastructure needed to ensure consistent, high-quality maternal health services are also needed. These efforts are crucial in understanding both how health systems can encourage facility birth and which women are at highest risk for preventable pregnancy- and childbirth-related mortality to avert their deaths throughout rural Zambia.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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