



Predictors of Maternal Preference for Sex-Selective Pregnancy Termination in a Developing Nation with Restrictive Abortion Laws

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Abstract

Introduction The rapid and unexpected increase in the sex ratio at birth in Nigeria between 1996 and 2014 is yet to be fully explained. The contribution of sex-selective abortion has not been explored.

Methods A cross-sectional survey of pregnant women was employed to address this need.

Results Preference for sex-selective abortion was noted in 8.6% of the respondents. The association between parity ≥ 4 and preference for sex-selective abortion was statistically significant. Women who were child gender-biased were significantly more likely to prefer sex-selective abortion. Experiencing intimate partner violence, and having problems with in-laws for inability to give birth to their desired gender, were predictors of maternal preference for sex-selective abortion. Women who preferred sex-selective abortion, however, felt it was necessary to campaign against gender preference.

Conclusion Preference for sex-selective abortion exists in Nigeria, despite our restrictive abortion laws. However, the women's underlying reasons may include gender balancing in the family and an escape from discrimination. Improving contraceptive uptake, restriction of disclosure of fetal sex for non-medical indications, and sanctions against violent partners/oppressive in-laws are advocated. Rapid progress towards achieving a world free of the offensive gender inequalities that force women to opt for sex-selective abortion ab initio is desirable.

Keywords Sex ratio · Restrictive abortion laws · Sex-selective abortion · Nigeria

Significance Statement

What is Already Known on this Subject? Skewed sex ratio at birth occurs in countries with a preference for sons. This has been linked with sex-selective abortion and general discrimination against girls and women. The sex ratio of Nigerian births increased unexpectedly between 1996 and 2014, and this is yet to be fully explained.

What This Study Adds? Close to one-in-ten of the women surveyed preferred sex-selective abortion, indicating that it may be a contributor to the raised sex ratio in Nigeria. The suggested reasons for their preference are family gender balancing and exit from domestic violence and oppression. These should be mitigated by anti-gender preference campaigns.

Introduction

Data regarding the sex ratio at birth [SRB] in Nigeria between two time frames (1996–2008 and 2009–2014) showed a rapid and unexpected increase from 1.03 to 1.06 respectively (Kaba 2015), implying an increase of 1.03 boys to 1.06 boys for every 1 girl born between the two time frames. This rise in the SRB over the specified time frames was adduced to historical fluctuations in the SRB that have also been noticed in other nations (Egwuatu 1984; Garenne 2002), the nation's vast geography and diverse

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ethnic composition (Ayeni 1975; Azeez et al. 2007; Kaba 2008; Navara 2009; Rehan 1982), the preference for sons in many ethno-geopolitical zones (Eguavoen et al. 2007), the younger age of the parents (Garenne 2008; Kaba 2015), higher mortality figures for male infants and adults (Kaba 2008), and the male child-favouring impact of improved socio-economic status of the populace (Adebowale et al. 2014; Coney and Mackey 1998; Egwuatu 1984). This increased sex ratio is already being linked with a number of reproductive health issues. Skewed SRB in favour of sons could result in a society with bridal deficits (more men of marriageable age but fewer available women) (d'Albis and de la Croix 2012), especially where polygamy is acceptable. Also, data from Nigeria have shown that the number of children desired by women and their contraceptive uptake are influenced by the sex of the first child. Again, frequent pregnancies and shorter birth intervals have been found in women who commenced childbearing with daughters (Kaba 2015).

Although the rise in SRB in many Asian and African countries has been found to be closely linked with sex-selective abortions (SSA) (Melhado 2011; Navara 2009; Sen 2003), authors claim this is certainly not the reason for the Nigerian experience (Anonymous 2014; Kaba 2015; Maaji et al. 2010). They emphasize that, although expectant mothers/societies in Nigeria still have a preference for sons, this has not resulted in a search for, or performance of, sex-selective pregnancy terminations. Abortions in Nigeria are occasioned by unwanted pregnancies in unmarried/‘under-aged’ women, to avoid dropping out of school, as a means of contraception, to escape from harsh economic realities, to avoid the stigma attached to having pregnancies too late/too frequently/too many, or due to problems with partners (Mitsunaga et al. 2005; Omideyi et al. 2011; Sedgh et al. 2006). Incidentally, despite the nation’s restrictive abortion laws, an estimated 760,000 pregnancies were terminated (equivalent to a rate of 27 induced abortions per 1000 women aged 15–44) in 2006 (Awopetu and Fasanmi 2011; Fayemi et al. 2010; Lauro 2011), climbing to 1.25 million induced abortions (approximating to a rate of 33 abortions per 1000 women aged 15–49) in 2012 (Bankole et al. 2015). Comparatively, in the less abortion-restrictive United States of America, abortion rates fell from 16.9 per 1000 women aged 15–44 in 2011 to 13.5 per 1000 women aged 15–44 in 2017 (Jones and Jerman 2014; Jones et al. 2019).

In spite of the reasons stated above, SSA cannot be dismissed from the Nigerian context. Firstly, it is doubtful that all the possible reasons for the rapid rise in the SRB between 1996 and 2014 have been identified. Secondly, SSA is the most consistent predictor of skewed SRB in many nations of the world. It is possible that it might also be a contributor to the findings in Nigeria. Thirdly, gender preference is strongly rooted in some Nigerian communities (Eguavoen

et al. 2007; Inyang-Etoh and Ekanem 2016). With the widespread availability of ultrasound facilities for prenatal sex determination, this gender preference could predispose women to opt for abortion for an unwanted gender. Fourthly, this increase in the Nigerian SRB also coincides with the era of the introduction of pre-implantation genetic diagnosis onto the Nigerian assisted reproduction landscape. Finally, in Britain with liberalized abortion laws but where SSA is illegal, doctors have been secretly filmed agreeing to terminate fetuses purely because of the sex (Newell and Watt 2012). Similarly, authors have reported that abortions were performed clandestinely across Nigeria and that abortion rates were underestimated. This was supported by a 2018 survey, using Guttmacher Institute’s adaptation of social network-based methods, which found that 1.8 million induced abortions (about 41.1 per 1000 women aged 15–49) occurred in 2017. When information related to the abortion-experiences of the closest confidantes of the respondents was included, the figure scaled up to 2.7 million (equating to 62.7 per 1000 women aged 15–49) (Performance Monitoring and Accountability 2020). Thus, Nigeria’s restrictive abortion laws notwithstanding, there might be women or providers who will clandestinely seek or offer SSA.

Studies dealing with SSA are sparse in Nigeria. In order to prevent the worsening of our SRB, all possible causes must be explored. The aim of this study is to identify the existence of a preference for, and explore the possible predictors of, SSA in the Nigerian context. This will provide data for public health interventions, monitoring, and policy formulation.

Methods

This cross-sectional survey was conducted in Ado Ekiti, the largest city and capital of Ekiti State, with a population of 308,621 (National Population Commission 2010). The Yoruba ethnic group makes up the largest and indigenous population in Ado Ekiti, with other ethnic groups (such as Igbo and Hausa) making up the minorities. The extended family system and polygamy are cultural norms among this agrarian society. The city is reputed to be the nerve centre for a farming region known for the cultivation of cocoa, yams, cassava, and tobacco.

The study participants were expectant mothers at the antenatal clinics of the Ekiti State University Teaching Hospital (EKSUTH), Ado Ekiti, Ekiti State, and the duration was between January and June 2014. EKSUTH is the only state-owned teaching hospital, serving the population within Ekiti State and its environs.

After explaining the purpose of the study during the regular prenatal education session, all antenatal attendees who indicated an interest in participating in the survey were

handed a questionnaire. They were assured of their anonymity and the confidentiality of their responses, and that they were free to opt out of the survey whenever they so desire. The completion of the study instrument was taken as consent from the respondents. The semi-structured questionnaire had three parts; the first enquired about the socio-demographic characteristics of the respondents. The second part explored their fertility preferences, while the third aspect dealt with their reproductive health choices.

If we assume that 50% of the population will opt for sex-selective abortion, to achieve 80% power and a confidence interval of 95% at 5% precision, a minimum sample size of 384 would be needed for this study. If a 20% non-response rate is added, the sample size would be 461 women. To ensure robustness, 794 women were purposively selected for the study. The survey was approved by the Ethics and Research Committee of the Ekiti State University Teaching Hospital, Ado Ekiti.

The retrieved data was coded into and analyzed using the Statistical Software for the Social Sciences (SPSS)

package version 20. The results were presented as percentages. Univariate analysis was done to determine the association between maternal variables and preference for sex-selective abortion using the crude odds ratio; variables with p-value < 0.05 were included in a multivariate logistic regression model to identify the independent predictors of maternal preference for sex-selective abortion. The results were expressed as adjusted odds ratio at 95% confidence interval (C. I.), with the level of significance set at p < 0.05.

Results

In Table 1, more women, 429 (54%), actually preferred male children compared with 365 (46%) who wanted daughters in the index pregnancy. Preference for a male child was significantly higher amongst younger women (28 ± 4.4 years versus 29 ± 5.2 years, p = 0.018), who were nulliparous (37.3% versus 19.7%, p < 0.001), who had husbands with only a primary education (9.1% versus 4.9%, p = 0.024), and with

Table 1 Actual gender preferences of research participants

Variables	Categories	Actual child-gender preference		χ^2	p value
		Son	Daughter		
		n (%)	n (%)		
Child-gender preference		429 (54)	365 (46)		
Age (mean ± SD)		28 ± 4.4	29 ± 5.2	– 2.369 ^a	0.018*
Parity	Nullipara	160 (37.3)	72 (19.7)	29.437	< 0.001*
	Multipara	269 (62.7)	293 (80.3)		
Religion	Christianity	368 (85.8)	295 (80.8)	3.540	0.170
	Islam	59 (13.8)	68 (18.6)		
	Traditional	2 (0.5)	2 (0.5)		
Ethnicity	Yoruba	384 (89.5)	337 (92.3)	2.953	0.228
	Igbo	32 (7.5)	23 (6.3)		
	Hausa	13 (3)	5 (1.4)		
Education	Primary	28 (6.5)	18 (4.9)	1.116	0.572
	Secondary	174 (40.6)	145 (39.7)		
	Tertiary	227 (52.9)	202 (55.3)		
Employment	Unemployed	124 (28.9)	84 (23)	3.540	0.060
	Employed	305 (71.1)	281 (77)		
Husband’s level of education	Primary	39 (9.1)	18 (4.9)	5.120	0.024*
	Post-primary	390 (90.9)	347 (95.1)		
Desired lifetime pregnancies	≤ 4	383 (89.3)	343 (94)	5.552	0.018*
	≥ 5	46 (10.7)	22 (6)		
Husband had child-gender preference	Yes	249 (58)	122 (33.4)	48.011	< 0.001*
	No	180 (42)	243 (66.6)		
Intimate partner violence over inability to have preferred sex	Yes	64 (14.9)	18 (4.9)	21.239	< 0.001*
	No	365 (85.1)	347 (95.1)		

*Significant at p < 0.05

^aIndependent samples t test

a bias for a male child (58% versus 33.4%, $p < 0.001$). Also, women who desired at least 5 children (10.7% versus 6%, $p = 0.018$), and experienced problems with their spouses due to their inability to ‘produce’ a child with their preferred gender (14.9% versus 4.9%, $p < 0.001$), were more likely to have a preference for a son.

Of the seven hundred and ninety-four women who completed the survey, 68 (8.6%) admitted that they preferred to terminate the pregnancy if the fetus had an unwanted gender. The mean age of the women was 28.44 ± 4.83 years, with a range of 17–44 years. The mean parity was 1.2 ± 1.1 (range: 0–5). The association between parity ≥ 4 (adjusted odds ratio [AOR]: 0.23; 95% CI 0.08–0.69, $p = 0.009$) and

preference for sex-selective abortion was statistically significant. However, the relationship between age, religion, ethnicity, employment status and couples’ level of education did not reach significant levels. Also, having had a previous caesarean delivery did not predict preference for sex-selective pregnancy termination (Table 2).

Table 3 highlights the relationship between fertility desires of the respondents and preference for sex-selective abortion. Mothers who were child gender-biased (AOR: 0.30; 95% CI 0.15–0.60, $p = 0.001$), and who wanted more girls in the family (AOR: 0.42; 95% CI 0.21–0.84, $p = 0.015$) were significantly more likely to prefer sex-selective abortion. The ideal number of desired children, the age limit

Table 2 Respondents’ demographic and obstetric characteristics

Characteristics	Prefers sex-selective abortion		Crude odds ratio (95% CI)	p-value	Adjusted odds ratio (95% CI)	p-value
	Yes n (%)	No n (%)				
Age (years)						
≤ 19	0 (0)	16 (2.2)	1.00			
20–29	39 (57.4)	423 (58.3)	0.00 (0.00– ∞)	0.99		
30–39	25 (36.8)	277 (38.2)	0.00 (0.00– ∞)	0.99		
≥ 40	4 (5.9)	10 (1.4)	0.00 (0.00– ∞)	0.99		
Parity						
0–1	41 (60.3)	496 (68.3)	1.00		1.00	
2–3	12 (17.6)	195 (26.9)	1.34 (0.69–2.61)	0.384	1.00 (0.40–2.52)	0.999
≥ 4	15 (22.1)	35 (4.8)	0.19 (0.10–0.38)	$< 0.001^*$	0.23 (0.08–0.69)	0.009*
Religion						
Christianity	58 (85.3)	605 (83.3)	1.00		1.00	
Islam	8 (11.8)	119 (16.4)	1.43 (0.66–3.06)	0.363	1.14 (0.38–3.42)	0.822
Traditional	2 (2.9)	2 (0.3)	0.10 (0.01–0.69)	0.020*	1.11 (0.04–34.50)	0.955
Ethnicity						
Yoruba	60 (88.2)	661 (91)	1.00		1.00	
Igbo	3 (4.4)	52 (7.2)	1.57 (0.48–5.19)	0.457	4.73 (0.83–26.83)	0.079
Hausa	5 (7.4)	13 (1.8)	0.24 (0.08–0.68)	0.008*	0.17 (0.02–1.74)	0.135
Level of education						
Primary	9 (13.2)	37 (5.1)	0.28 (0.12–0.63)	0.002*	0.28 (0.03–2.42)	0.249
Secondary	32 (47.1)	287 (39.5)	0.60 (0.35–1.03)	0.063	0.82 (0.36–1.83)	0.620
Tertiary	27 (39.7)	402 (55.4)	1.00		1.00	
Employment status						
Unemployed	13 (19.1)	195 (26.9)	1.00			
Employed	55 (80.9)	531 (73.1)	0.64 (0.34–1.20)	0.168		
Husband’s educational level						
Primary	4 (5.9)	53 (7.3)	0.96 (0.33–2.80)	0.938	8.54 (0.47–154.53)	0.147
Secondary	29 (42.6)	189 (26)	0.47 (0.28–0.79)	0.005*	0.60 (0.26–1.40)	0.236
Tertiary	35 (51.5)	484 (66.7)	1.00		1.00	
Previous caesarean delivery						
Yes	6 (8.8)	76 (10.5)	0.83 (0.35–1.98)	0.670		
No	62 (91.2)	650 (89.5)	1.00			

*Significant at $p < 0.05$

Table 3 Fertility preferences of the respondents

Fertility preferences	Prefers sex-selective abortion		Crude odds ratio (95% CI)	p value	Adjusted odds ratio (95% CI)	p value
	Yes	No				
	n (%)	n (%)				
Age duration to obtain preferred sex (years)						
< 35	40 (58.8)	517 (71.2)	1.00		1.00	
35–39	10 (14.7)	137 (18.9)	1.06 (0.52–2.17)	0.874	1.66 (0.62–4.44)	0.315
≥ 40	18 (26.5)	72 (9.9)	0.31 (0.17–0.57)	< 0.001*	0.64 (0.25–1.63)	0.351
Number of pregnancies before preferred sex						
≤ 4	50 (73.5)	663 (91.3)	1.00		1.00	
> 4	18 (26.5)	63 (8.7)	0.26 (0.15–0.48)	< 0.001*	0.38 (0.09–1.64)	0.195
Desired number of children						
≤ 4	50 (73.5)	676 (93.1)	4.87 (2.64–8.96)	< 0.001*	1.13 (0.26–4.34)	0.869
> 4	18 (26.5)	50 (6.9)	1.00		1.00	
Wants more boys in the family						
Yes	32 (47.1)	340 (46.8)	0.99 (0.60–1.63)	0.971		
No	36 (52.9)	386 (53.2)	1.00			
Wants more girls in the family						
Yes	30 (44.1)	180 (24.8)	0.42 (0.25–0.69)	0.001*	0.42 (0.21–0.84)	0.015*
No	38 (55.9)	546 (75.2)	1.00		1.00	
Do you have a particular child-gender preference?						
Biased	45 (66.2)	238 (32.8)	0.25 (0.15–0.42)	< 0.001*	0.30 (0.15–0.60)	0.001*
Neutral	23 (33.8)	488 (67.2)	1.00		1.00	

*Significant at $p < 0.05$

the women were ready to attain in search of their preferred child-gender, and the number of pregnancies they were willing to have to achieve their preferred gender were not predictors of maternal preference for sex-selective abortion from this study.

The influence of specific reproductive health issues was compared between the two groups of women in Table 4. Women who experienced intimate partner violence for their inability to have their spouses' preferred child-gender (AOR: 0.04; 95% CI 0.02–0.09, $p < 0.001$), and who had problems with their in-laws because they have not given birth to their wanted gender (AOR: 0.19; 95% CI 0.06–0.60, $p = 0.005$) were significantly more likely to opt for sex-selective abortion. Women who preferred sex-selective abortion however, feel it is necessary to campaign against gender preference.

Discussion

The respondents whose husbands had only a primary education were more likely to have a preference for sons. Child-gender preference has been shown to get weaker with higher education, and so husbands with limited education are more likely to be unaffected by modern/civilized ideas (Arnold 1985). Families headed by men with limited education will

more likely be at the lower wealth quintiles and in low socioeconomic class, factors which have encouraged son preference (Chavada and Bhagyalaxmi 2009; Yasmin et al. 2013).

The index study found that women who experienced intimate partner violence for failing to have the preferred child-gender were about three times more likely to prefer sons than women who do not. This scenario is commoner in families with no previous/living children, and in communities where women are financially dependent on the men (Aduloju et al. 2015; Eguavoen et al. 2007). Such women are vilified, battered/beaten, and are divorced when they do not give birth to a son. In Nigeria, over one-third of reproductive-age women agreed that wife-beating is justified when a woman argues with her husband (National Population Commission and ICF International 2014). In order to avoid hostilities, and to escape from such perils to their lives, women would rather tag along with their spouses' choices.

The finding that nearly one in ten pregnant women in our environment will prefer an abortion if the prenatal gender of the fetus contradicts their expectation is disturbing. Despite the restrictive abortion laws in Nigeria, a great number of pregnancies are still terminated in Nigeria annually. This implies that women who prefer SSA would also be able to by-pass the laws and achieve their objective. Such clandestine abortions are usually unsafe and associated with

Table 4 Reproductive health issues associated with preference for sex-selective abortion

Issues	Prefers sex-selective abortion		Crude odds ratio (95% CI)	p value	Adjusted odds ratio (95% CI)	p value
	Yes n (%)	No n (%)				
Intimate partner violence over inability to have preferred sex						
Yes	38 (55.9)	44 (6.1)	0.05 (0.03–0.09)	<0.001*	0.04 (0.02–0.09)	<0.001*
No	30 (44.1)	682 (93.9)	1.00		1.00	
Problems with in-laws over inability to have preferred sex						
Yes	13 (19.1)	29 (4)	0.18 (0.09–0.36)	<0.001*	0.19 (0.06–0.60)	0.005*
No	55 (80.9)	697 (96)	1.00			
Is child-gender preference good?						
Yes	17 (25)	205 (28.2)	1.00			
No	14 (20.6)	274 (37.7)	1.62 (0.78–3.37)	0.194		
I don't know	37 (54.4)	247 (34)	0.55 (0.30–1.01)	0.055		
Campaign against child-sex preference necessary?						
Yes	38 (55.9)	276 (38)	0.48 (0.29–0.80)	0.005*	0.43 (0.21–0.85)	0.016*
No	30 (44.1)	450 (62)	1.00			
Wants fetal sex determination during a scan?						
Yes	42 (61.8)	358 (49.3)	0.60 (0.36–1.00)	0.051		
No	26 (38.2)	368 (50.7)				

*Significant at $p < 0.05$

significant morbidity and mortality (Mitsunaga et al. 2005). Besides, there might be a number of women who will opt for SSA but either declined to participate or withheld the information for fear of stigmatization or 'losing face.' Further studies to explore these observations are needed.

Women with parity ≥ 4 were significantly more likely to prefer SSA. Although there is no policy in Nigeria recommending sanctions for having more than a prescribed number of children, Nigerian couples are increasingly desiring smaller families (National Population Commission and ICF International 2014). Unfortunately, rather than increase contraceptive use, some couples resort to illegal abortions to space their pregnancies (Adanikin et al. 2014; Awoleke et al. 2015); this may be heightened by an unwanted fetal gender. On the contrary, improved contraceptive access and uptake, resulting in fewer overall pregnancies, was a key factor in the sustained drop in abortion rates in the United States between 2011 and 2017 (Boonstra 2014; Kavanaugh and Jerman 2017; Lindberg et al. 2018; Pace et al. 2019).

Our study found that significantly more women who preferred SSA were also child gender-biased. Gender preference (either for sons or daughters) appears to be a global phenomenon to an extent. However, the precise reason(s) for the preference varies depending on the cultural norms, religious beliefs, and family structure. Although only a few communities deliberately prefer daughters, the women in our study who preferred SSA also wanted more daughters. This might imply that their gender preference and choice of SSA may be linked with gender balancing within the

family, rather than an exclusive son preference. There are indications that there is a growing acceptance of family balancing as a reason for sex selection, but because of the possibility of creating further imbalance in the SRB, some people are opposed to it (Macklin 2010). Besides, our laws in Nigeria prohibit the conduct of abortions purely on the grounds of sex selection. Some countries have also banned the disclosure of fetal sex for non-medical reasons, in an attempt to reduce the incidence of SSA (Nie 2011).

Significantly, women who suffered intimate partner violence especially because of their inability to have infants of their spouses' preferred gender were more likely to opt for SSA. Also, when the in-laws were abusive because a woman failed to have their choice gender, more women preferred SSA. This domestic coercion of women to have abortions by their spouses and/or families could lead to grave consequences, because such women may be at risk of neglect, or physical harm for refusing to have SSA. Sanctions against such domestic oppression and infringement on the rights of the women, coupled with provision of beneficial exit options from the violent atmosphere, are needed.

Women who preferred SSA in this study also feel that the campaign against sex preference is necessary in our environment. Although women have been alleged to be indifferent about societal gender preference in favour of men, this finding is an indication that they are displeased with the status quo. Also, it could be a reflection of the fact that women are forced by discriminatory pressure against them to opt

for SSA. They might prefer not to bring a girl into the same world of hostilities that they live in.

A limitation of this study is its facility-based design. However, the findings could represent the tip of the iceberg. Studies that will include the opinions and practices of abortion providers and focused group interviews/discussions are needed to provide an in-depth evaluation of the problem.

In conclusion, preference for sex-selective abortions exists in Nigeria, despite our restrictive abortion laws. Having at least four children, being child gender-biased, and experiencing hostilities from husbands and/or in-laws were predictors of maternal preference for SSA according to our data. Since the women who opted for SSA also wanted more girls in the family, and feel that the campaign against sex preference is needed, their reasons may include gender balancing in the family, and an escape from discrimination. Improving contraceptive uptake, restriction of disclosure of fetal sex for non-medical indications, and sanctions against violent partners/oppressive in-laws are advocated. Rapid progress towards achieving a world free of the offensive gender inequalities that force women to opt for sex-selective abortion ab initio is desirable.

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Data Availability The data for this work could be made available after due permission from the institutional review board of Ekiti State University Teaching Hospital, Ado Ekiti, Nigeria.

Compliance with Ethical Standards

Conflict of interest The authors declare no competing interests for this work.

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