ORIGINAL RESEARCH ARTICLE

Influence of sex composition of surviving children on childbearing intention among high fertility married women in stable union in Northwestern, Nigeria

DOI: 10.29063/ajrh2023/v27i10.7

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Abstract

Achievement of Sustainable Development Goals (SDGs), especially goals one (end all forms of poverty), three (ensure healthy lives and promote well-being for all at all ages), four (ensure inclusive and equitable quality education and promote life-long learning opportunities for all) and five (achieve gender equality and empower all women and girls) might be a mirage without conscious efforts on the part of many developing countries to reduce population growth. Rapid population growth due to a high fertility rate and fertility desire may engender strife, poverty, unemployment, competition for scarce resources.The study explored the influence of sex composition of living children on childbearing intention among high fertility married women in stable union. This was a cross-sectional descriptive study and the study population were married women with high fertility in stable union. Results showed that sex composition of surviving children were significantly associated with respondents' fertility intentions. The following were the predictors of fertility intentions; sex composition of surviving children, type of family, contraceptive use, child parity, women empowerment status and others. Sex composition of surviving children was significantly associated with the fertility intentions of the high fertility married women in stable union. *(Afr J Reprod Health 2023; 27 [10]: 81-90).*

Keywords: Sex composition, married women, fertility intention, stable union

Réalisation des objectifs de développement durable (ODD), en particulier les objectifs un (mettre fin à toutes les formes de pauvreté), trois (garantir une vie saine et promouvoir le bien-être de tous à tous les âges), quatre (garantir une éducation inclusive et équitable de qualité et promouvoir tout au long de la vie opportunités d'apprentissage pour tous) et cinq (atteindre l'égalité des sexes et autonomiser toutes les femmes et les filles) pourraient être un mirage sans des efforts conscients de la part de nombreux pays en développement pour réduire la croissance démographique. Une croissance démographique rapide due à un taux de fécondité élevé et à un désir de fécondité peut engendrer des conflits, la pauvreté, le chômage et la compétition pour des ressources rares. L'étude a exploré l'influence de la composition par sexe des enfants vivants sur l'intention de procréer parmi les femmes mariées à forte fécondité en union stable. Il s'agissait d'une étude descriptive transversale et la population étudiée était composée de femmes mariées à fécondité élevée et en union stable. Les résultats ont montré que la composition par sexe des enfants survivants était significativement associée aux intentions de fécondité des répondants. Les éléments suivants étaient les prédicteurs des intentions de fécondité : composition par sexe des enfants survivants, type de famille, utilisation de contraceptifs, parité des enfants, statut d'autonomisation des femmes et autres. La composition par sexe des enfants survivants était significativement associée aux intentions de fécondité des femmes mariées à forte fécondité vivant en union stable. *(Afr J Reprod Health 2023; 27 [10]: 81-90).*

Mots-clés: Composition par sexe, femmes mariées, intention de fécondité, union stable

Introduction

Persistent high fertility in sub-Saharan Africa (SSA) has been of concern to demographers and global health practitioners for decades, as SSA fertility trends are singled out as markedly different (higher) than the rest of the world and then expectations based on historic fertility trends elsewhere[1]. There is evidence to show that total fertility rates (TFR) are declining in the developed and much of the developing world[2,3]. although the trend in some developing countries, including those in sub-Saharan Africa, shows stable or increasing fertility rates[4].

Nigeria's population growth rate has been driven by high fertility, which has fallen in the last few decades but not as rapidly as the fall of the crude death rate[5]. Nigeria's TFR by region shows that the TFR in Northwestern Nigeria (7.3) surpasses the national rate but the TFR in these study communities in Kaduna state is extraordinarily high and surpasses all others at nearly [6].

Worldwide, people are producing fewer and fewer children every day and this has contributed to a reduction in the population sizes in many countries[7]. In some countries in sub-Saharan Africa, women still produce more than four children, but more importantly, many women with as many as four children still want to produce more[8]. The desire for more children, heavily entrenched into strong cultural preferences for large families[9], desire for sons rather than daughters together with low levels of contraception[10, 11]. seem to be the driving force for the high fertility rates in sub-Saharan Africa[11]. This is because the expectation of parents is that male children add to family affluence, continue the family lineage, perform important religious roles and defend or exercise the family's power, while daughters sap the family resources and are married away to a different family[12-14].

Fertility desire can be influenced by a number of factors that operate at the societal and personal/individual levels. At the societal level, fertility desire is largely driven by social and cultural pressures, and the need to maintain stability of the union[9,15]. At the personal/individual level, several factors have been associated with fertility desire including age of individuals[16,17], number of living children[18-20]. male sex[17,21]. partner's desire to have a child or believing that one's partner wanted more children[21,22]. knowledge of one's HIV-positive status[23,24]. and enrolment on antiretroviral therapy (among HIV-positive individuals)[21,25].

In a society where fertility reduction campaign has a strong base and adherence to the themes of Programme of Action of 1994 International Conference on Population and Development(ICPD), women who already have more than four surviving children should not have intention to bear more children [26]. The restriction to highly fertile women was in response to Nigeria population policies which recommended reduction of number of children a woman should have during her lifetime to 4 [27,28].

Methods

Study area

Zaria is a metropolitan city in Nigeria which at the present time lies within four local government areas in Kaduna State, it is the capital city to the Zazzau Emirate Council, and one of the original seven Hausa city –states and a major city in the state. The local government that made up of the city of Zaria includes: Zaria Local Government, Sabongari Local Government, Giwa Local Government and Soba Local Government Areas in Kaduna State, Nigeria[29].

Zaria metropolis contains Nigeria's largest university, Ahmadu Bello University, and various tertiary institutions including the Federal College of Education, Nigeria College of Aviation Technology, Nigeria Institute of Transport Technology, Nigeria Institute of Leather and Science Technology and Nuhu Bamali Polytechnic[30]. From 2006 population census, Zaria was estimated to have 736,000[31]. It is home to the Emir of Zazzau[32].

Study design

A community-based descriptive cross sectional study was conducted between July 2022 to January 2023 among married women with five or more children in stable union in Zaria metropolis. The major inclusion criteria were women within reproductive age group, who were married with at least five children and consented to participate in the study. The people who were excluded includes; women who were menopausal, sterilized or declared infecund/infertile and women who were seriously sick to be interviewed.

Sample size determination

The required sample size (n) was calculated using the Cochran's formula for cross-sectional studies when the outcome variable is a proportion[2]. An absolute precision precision of 5% as well as a standard normal deviate at a confidence level of 95% corresponding to 1.96 was used in the computation. Proportion of married women with

high fertility in a stable union who are desirous of more children in previous survey was 32.0% = 0.32[6]. Non response of 10% was applied and a minimum sample size of 367 of respondents was achieved, which was approximated to 400.

Sampling technique

Multistage sampling technique was used to select participants.

Stage 1: (Selection of LGA). Sabon Gari was selected randomly through balloting out of the four local government areas that make up of Zaria metropolis

Stage 2: (selection of wards). In Sabon Gari Local Government Area, a list of all the political wards was drawn, and then using balloting, Samaru ward was randomly selected out of the 10 wards in Sabon Gari Local Government Area.

Stage 3 (Selection of settlements). Hayin Dogo, Danraka, Ungwan saidu, were selected out of 4 settlements using ballotting.

Stage 4: (selection of streets within the settlements). Five streets were randomly selected using balloting out of eight streets.

Stage 5: (selection of houses and households within a street). All the houses in all the five (5) streets were numbered. A register of all households in each street was developed and use as the sampling frame. A systematic sampling technique was used to select the households for the study.

Stage 6: (selection of respondents within selected households). The eligible married women within the household were identified and interviewed.

Data collection tool and procedure

Fertility is the actual reproductive performance of a woman. High fertility in this context means having 5 or more surviving children. Stable union means women who have married once in their life time.

The tool for data collection was pretested structured, interviewer administered questionnaires with closed and open ended questions adapted from previous studies[33,35, 36]. The questionnaire consist of key items of information collected which include socio-demographic characteristics, sex composition of living children. The key independent variable was Sex Composition of the Living Children (SCLC). The ˋSex Composition of Living Childrenˋ was generated as a proxy from the information on the number of living daughters and living sons. At the time of the survey, information was sought on the number of living daughters and living sons. It is possible that the living children of a woman are; Case 1: either all males or all females. Case 2: sex mix i.e some are males and others are females. Case 1 was categorized as "same sex"[33].

Sex composition of children was categorized into five groups as follows: (a) only daughters; (b) only sons; (c) more daughters than sons; (d) more sons than daughters; and (e) equal numbers of daughters and sons. In addition, some key demographic characteristics considered in the analysis included age, education, parity, religion, and occupation[33].

For women empowerment, scores were created using about ten variables. These variables are categorical and scores were assigned to responses of each woman included in the study. Thereafter, the overall score was computed for each woman and disaggregated into three categories as highly empowered (70% and above), fairly empowered (50-69%) and poorly empowered (49% and bellow)[34].

Data analysis

Data were cleaned manually, entered into the computer and analysed using Statistical Package for Social Sciences (SPSS, IBM Corporation USA) software program version 23. For all categorical variables, descriptive statistics was used to present data using frequency distribution tables, charts and graphs. Bivariate analysis was done using chi-square where appropriate to determine the relationship between independent and dependent variables. Multivariate analysis was done using logistic regression to determine the predictors. Statistical significance was set at p-value < 0.05.

Results

Table 1; shows that 29.3% of respondents were in age group 30-34 years, 97.5% were Muslim and 69.0% were Hausa by tribe. More than half (56.1%) had at least secondary education and 52.3% were full housewives. About half (50.3%) were in monogamous marriage. More than fourth-fifth (85.0%) had their age of first marriage during adolescence. Table 3: There is statistically significant association between sex composition of

Table 1: Socio-demographic characteristics of respondents (n=400)

Variable	Frequency	Percent
Age group n= 400		
20-24	4	1.0
25-29	85	21.3
30-34	117	29.3
35-39	114	28.5
40-44	48	12.0
45-49	48	8.0
Religion	**mean aged 34.53±5.875**	
Islam	390	97.5
Christianity	10	2.5
Tribe		
Hausa	276	69.0
Fulani	93	23.3
Yoruba	14	3.5
Igbo	1	0.3
Others	16	4.0
Highest level of education		
None	8	2.0
Quranic only	84	21.0
Primary	84	21.0
Secondary	161	40.3
Tertiary	63	15.8
Occupation		
Full time H/W	209	52.3
Businesswomen	98	24.2
Civil Servant	46	11.6
Artisans	31	7.8
Farmers	16	4.0
Occupation of Husband		
Civil Servant	164	41.1
Farming	120	30.0
Artisans	75	18.8
Businessman	37	9.3
None	4	1.0
Number of co-wives		
One	209	50.3
Two	140	35.0
Three	37	9.3
Four	22	5.5
Age at First Marriage		
≤ 14	44	11.0
15-19	296	74.0
20-24	52	13.0
25-29	2	0.5
30-34	3	0.8
≥35	3	0.8
	Mean aged 17.33±3.216	

living children and fertility intentions to bear more children. Tables 4: The age, educational status, ethnicity, occupation of respondents, contraceptive use, family type, level of empowerment and parity were statistically significantly associated with fertility intentions. Table 5: shows women with equal sex children [AOR = 0.336,<0.05], more boys [AOR = 0.752, <0.05], and only boys [AOR = 0.106, <0.05] have significantly low odds to desire for more children compared to women with more girls children. Women from polygamous home of 2 wives [AOR = 0.744, <0.05], 3 wives [AOR = 0.147, <0.05], and 4 wives [AOR = 0.078, <0.05], have a significant low odd to desire for more children compared to women in monogamous home.

More also, women that don't use contraception [AOR = 2.448, <0.05] have a significant two times odd to desire for more children compared to women who are using contraceptive. In addition, women who are fairly empowered [AOR = 0.271,<0.05], and women that are highly empowered [AOR = 0.005,<0.05], have a significant low odd to desire for more children compared to women who are poorly empowered.

In Table 5, shows that women aged within 25-29 years [AOR = 4.667, <0.05], and 30-34 years [AOR = 2.441,<0.05] have significantly high odds to desire for more children, compared to women aged between 40-44 years [AOR = 0.667,<0.05], and 45-49 years [AOR = 0.020, <0.05], who had a significant low odd to desire for more children.

Women with Quranic [AOR = 13.000,<0.05], and primary education [AOR = 11.200,<0.05], have significantly high odds to desire for more children compared to women with secondary education [AOR = 0.600,<0.05], and tertiary education [AOR = 0.400,<0.05] that have a significant low odd to desire for more children compared to women with no formal education.

Also from the table, Hausa's [AOR = 28.833, <0.05], and Fulani's [AOR = 11.167,<0.05] have significantly high odds to desire for more children compared to women from other tribes.

Finally, from the table, women who are Christians [AOR = 0.020,<0.05], have a significant low odd to desire for more children compared to women who are Muslims.

Table 2: Respondents' number of living children and their sex composition (n=400)

Variables	Frequency	Percent (%)
Number of living children		
5	172	43.0
6 – 9	202	50.5
≥ 10	26	6.5
MNLC	**6.35±1.79**	
Number of living boys		
0	7	1.8
1 – 3	240	60.0
4 – 6	145	36.3
≥ 7	8	2.0
Number of living girls		
0	17	4.3
1 – 3	248	62.0
4 – 6	126	31.5
≥ 7	9	2.3

Table 3: Relationship of Sex Composition of living children and Fertility Intentions (n=400)

Sex Composition	**Fertility Intention**				
	No		**Yes**		
	Frequency	**(%)**	**Frequency**	**(%)**	**Total**
Different sexes with more girls	40	(26.1)	113	(73.9)	153 (100.0)
Equal number of Sex	29	(43.3)	38	(56.7)	67 (100.0)
Different sexes with more boys	71	(45.5)	85	(54.5)	156 (100.0)
Only Boys	5	(29.4)	12	(70.6)	17(100.0)
Only Girls	1	(14.3)	6	(85.7)	7(100.0)
Total	**146**	**(36.5)**	**254**	**(63.5)**	**400(100.0)**

X^2 = 15.736 df=4 p= 0.003

Table 4: Association between respondents' socio-demographic characteristics and fertility intention

Variable	**No**	**Yes**	**Total**	**X^2**	**p-Value**
Level of Education					
None	3(37.5)	5(62.5)	8(100.0)	11.637	0.020
Quranic	19(22.6)	65(77.4)	84(100.0)		
Primary	28(33.3)	56(66.7)	84(100.0)		
Secondary	71(44.1)	90(55.9)	161(100.0)		
Tertiary	25(39.7)	75(60.3)	63(100)		
Ethnic group					
Hausa	103(37.3)	173(62.7)	276(100.0)	9.351	0.050
Fulani	26(28.0)	67(72.0)	93(100.0)		
Yoruba	7(50.0)	7(50.0)	14(100.0)		
Others	10(62.5)	6(37.5)	16(100.0)		
Ibo	0(00.0)	1(100.0)	1(100.0)		
Religion					
Christian	5(50.0)	5(50.0)	10(100.0)	0.086	0.369
Muslim	141(36.2)	249(63.8)	390(100.0)		
Total	146(36.5)	254(63.5)	400(100.0)		
Number of wife					
One	72(35.8)	129(64.2)	201(100.0)	7.041	0.071
Two	44(31.4)	96(68.6)	140(100.0)		
Three	18(48.6)	19(51.4)	37(100.0)		
Four	12(54.5)	10(45.5)	22(100.0)		

Currently using Contraception					
Not using	58(29.0)	142(71.0)	200(100.0)	9.708	0.002
Using	88(44.0)	112(56.0)	200(100.0)		
Empowerment					
Highly empower	8(80.0)	2(20.0)	10(100.0)	9.614	0.010
Fairly empower	35(39.3)	54(60.7)	89(100.0)		
Poorly empower	103(34.2)	198(65.8)	301(100.0)		

Table 5: Multinomial logistic regression on the determinants of desire for more children

Variables	P-value	AOR	95% CI Lower Bound	Upper Bound
Sex Composition				
Different sexes with more girls	1 [Ref]			
Equal sex	0.001*	.336	.233	.486
Different sexes with more boys	0.047*	.752	.568	.997
Only boys	0.001*	.106	.059	.193
Only girls	0.097	6.000	.722	49.837
Number of co-wives				
1	1 [Ref]			
2	0.028*	.744	.571	.969
3	0.001*	.147	.091	.238
4	0.001*	.078	.041	.148
Use of Contraceptives				
Yes	1 [Ref]			
No	.001*	2.448	1.804	3.323
Women Empowerment				
Poorly empower	1 [Ref]			
Fairly empower	0.001*	.271	.201	.367
Highly empower	0.001*	.005	.001	.036
Educational Status				
None	1 [Ref]			
Quranic	0.001*	13.000	5.235	32.284
Primary	0.001*	11.200	4.487	27.959
Secondary	0.001*	0.600	0.314	0.907
Tertiary	0.001*	0.400	0.231	0.709
Tribe				
Other Tribes	1 [Ref]			
Hausa	0.000*	28.833	12.777	65.069
Fulani	0.000*	11.167	4.844	25.743
Yoruba	0.782	1.167	.392	3.471
Ibo	0.097	.167	.020	1.384
Religion				
Islam	1 [Ref]			
Christianity	0.000*	.020	.008	.049

** Significant values*

Discussion

The study explored the effects of sex composition of living children on fertility intention among high fertility married women in stable unions in Zaria. The mean age of the respondents was 34.53±5.875 years. In sex composition of the living children in this study, about two-fifth of respondents had 5 children, and half of the respondents had 6-9 children But the number of living boys among the respondents in this study showed that (1.8%) of respondents don't have boy, as well as (4.3%) of respondents have no girl child while about two-thirds had boys and girls mix. The reported sex composition of living children was skewed towards males in this study. Also, a high proportion of

women with more sons than daughters reported that their current pregnancies were unintended. These observations coupled with a sex ratio of 109:100 may infer that although both sexes are desired, some underlying son preference persisted[33]. The above results suggest that the desire for sons drives parity progression[10]. Considering the health and socioeconomic implication of high fertility, the prevalence of fertility intention among women who already have more than four living children can be considered as high. One may find it difficult to disentangle factors surrounding such intention among the women, but our study clearly revealed that gender preference and sex composition of the living children are important factors to reckon with[35].

In this study there was significant association between sex composition of living children and fertility intentions. Above two-thirds of respondents who had daughters more than the sons had fertility intentions to bear more children compared to about half of the respondents whose sons are more than daughters. This is comparable to a study which reported that all married women with one daughter desired another child, 90 percent desired son[36]. With one son and no daughter 36 percent desired another son and rest (48%) a daughter[36]. Consistent to a study where women with only female child, 80.0% desired son as next child and in women with two daughters children, 100.0% desired son as next child, showing strong desire for son[37,38]. The implication of this finding is that, as long as people in the society value male children more than female, couples will continue to give birth in the absence of a male child until they have their required number[39].

In this study, there was statistically significance association between the age of the respondents and fertility intentions, about fourth-fifth in age group (25-29 years) had fertility intentions to bear more children compared to less than half of the respondents in age group 40-44 years. This is similar to a study in Ethiopia where the majority of women with the intention to limit children belonged to age group 35-49 years (51.6%), this is because most women with intention to limit child bearing are older (35-49 years)[6].

Similarly in this study, level of education was also significantly associated with fertility intention, respondents with Quranic education (77.4%) and primary education (66.7%) had higher fertility intentions to bear more children compared to (55.9%) of respondents with secondary education and 60.3% with tertiary had fertility intentions. This is in a sharp contrast to a finding in Ethiopia where women (78.4%) with no formal education had intention to limit childbearing more than the educated counterpart. The uneducated or less educated women, who are more likely to want to limit childbearing, may already, have more children than the educated ones and this effect of education may diminish when analysis is done by their number of living children[40]. Non preference was slightly higher among those with the higher level educational group as expected. These findings differed from the expectation that persons with higher education would have less son preference and higher non preference. This implies that at every parity, women who have a sex composition that is daughter-dominant are more likely to progress to the next parity irrespective of level of education.

This study also observed that ethnic group was also associated with fertility intentions as 72% of Fulani extraction had fertility intentions to bear more children compared to half (50.0%) of Yoruba tribe who had fertility intentions which was statistically significant. This study finding is in tune with the result of a study which states that fertility rates among Hausa, Fulani ethnic groups who live in the North remains much higher than national average[41]. In particular**,** the Hausa/Fulani/Kanuri ethnic nationalities, residents of the North West and North East geopolitical zones of the country, Muslims and traditionalist religionists, the poor and those with no formal education are linked to high fertility levels of up to 7 children per ever married woman[**42**]**.** There was statistically significant association of respondents' who were not using contraception (71.0%) had fertility intentions. This is consistent to a study in Ethiopian where significant higher proportions (83%) are not using family planning services[40,43]. The perception of using children as basis of future collateral and allowing nature to decide whether one gets pregnant and gives birth is also very high in the Nigeria society[42].

The level of empowerment in this study was statistically significantly associated with fertility intention. This is similar to a finding which stated that the percentage of women who wanted

more children reduces consistently with increasing level of women empowerment[26]. The implication of this is that, the empowerd women are likely to know the importance of child education and the need to have family size that can be better managed.

Similarly in sex composition, equal sex (P-value <0.05; AOR = 0.336), son-dominant sex composition (p-value <0.05; AOR= 0.752), only boys (P-value <0.05; AOR = 0.106) are less likely to bear more children compared to girls-dominant sex composition which was statistically significant. This is consistent with findings in Malawi where independent variable where women who had same sex composition were 2.1(C.I=1.238–3.620; p=0.006) times more likely to have fertility intention than those who have different sexes composition respectively[26]. The number of living boys is a stronger predictor of the desire to limit childbearing than the number of living daughters[40]. The fact that there was high level of respondents in this study who expressed gender preference showed that the women in the community still stand the risk of high fertility, grand multiparity and induced abortions of fetuses of unwanted sexes, in addition to the consequent increase of risk of maternal mortality[44].

More also, respondents whose husbands have 1 wife are significantly likely to have intention to bear more children (P-value <0.05; AOR = 1.792), while respondents whose husbands have 2 wives (P-value <0.05; AOR = 2.182) were also 2 times likely to have intentions to bear more children. Islam permits a man to marry up to four wives and this explains the desire for more children found among husbands affiliated to Islam. However,a study suggested that competition between wives in a polygamous marriage could lead to increase in fertility desire[45].

Moreover, respondents who are Hausa are highly likely to have a childbearing intention (P-value <0.05; AOR = 1.680), followed by respondents who are Fulani by tribe (P-value <0.05; AOR = 2.577). This is consistent to a finding which stated that, there is fertility dominance of the Hausa/Fulani over other ethnic groups and of the Northern over the Southern geopolitical zones in all three DHS survey reports[41].

Finally, from the table, women who are Christians [AOR = 0.020, p<0.05], have a significant low odd to desire for more children compared to women who are Muslims. Similar to a study that likelihood of intention to bear more children was higher among Muslims (AOR=1.855; p<0.05) than Christians[26]. The finding on the association between religion and fertility desires attests to the fact that Islamic religion and customary law encourage a polygamous marriage, which in turn leads to high fertility[44]. This tendency might be related to the roles,decision making and traditional expectations men play in Nigeria as the heads and breadwinners of most families, as well as being the older partners in most cases.

Ethical consideration

Ethical approval was obtained from the health research ethics committee of Ahmadu Bello University Teaching Hospital Zaria. The content of the questionnaires and objectives of the study were explained to respondents and their written informed consents was sought and thumb print if not literate and they were assured of total confidentiality.

Conclusion

There was relationship between sex composition of living children and fertility intentions among high fertility women in Zaria. Sex composition of surviving children influence women's intention to bear more children after having five living children in a stable union. Other identified predictors were age, marital duration, education, tribe, women empowerment, contraceptive usage, occupation and religion. The State Government through State Ministry of Health should provide incentives to women who have less than five children such as lower school fees, lower hospital fees through opportunities such as the Special Health Insurance Schemes and the free or reduced cost of Education so as to motivate others towards having small families.

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