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Sex preferences for children in Ghana: the influence of educational attainment

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Abstract Education influences aspects of demographic behaviour and outcomes including a child sex preference. Sex preferences of children have been studied in different societies because of its associated social and demographic implications. Using the 2014 Ghana Demographic and Health Survey, we examined the association between educational attainment and sex preferences of children. Findings from the study indicated that there is preference for sons (26.1%) compared to daughters (17.4%). At higher levels of education, there is a higher likelihood for no preference for a sex of a child. Among the characteristics of respondents that influenced sex preferences are: gender, lineage, religion, occupation and desired family size. Acquisition of knowledge through education to some extent alter fertility preferences and hence the need to motivate individuals to attain some level of education.

Keywords Education · Sex preference · Son · Daughter

Introduction

Sex preferences for children have been a prominent issue in demographic studies globally. Among Asian countries, particularly China, India and Nepal, son preference has led to sex-selective abortions and skewed sex ratios (Lavely et al. 2001; Chhetri et al. 2011; Robitaille 2013; Rai et al. 2014). Other studies have been undertaken in parts of the Middle East and North Africa. For instance, El-Gilany and Shady's (2007) study of 400 pregnant women in Egypt found that more than half (57%) of the respondents had preferences for a son. Son preference was also

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associated with the sex of previous child(ren) and husband's education. However, studies on sex preference of children have been very few and far between in sub-Saharan Africa (SSA), particularly in Ghana. The few studies in SSA have been inconclusive; while some studies indicate preference for a son, others have shown preference for a daughter, with others showing no preference for either sex (Adeleye and Okonkwo 2010; Ushie et al. 2013; Kabano et al. 2013). The issue has implications for policy and thus calls for more study.

It is imperative to study sex preferences for children because studies have shown that such preferences have diverse social, economic and demographic consequences. The preference for a particular sex of a child over the other can lead to sex-selective abortions, sex differentials in child mortality, bias in the raising of children and imbalances in sex ratios at birth and can negatively affect maternal health and future fertility (Qadir et al. 2011; Rai et al. 2014; Adebowale and Palamuleni 2015). Karbownik and Myck (2011) added that the gender of the first-born child has a significant influence on marital stability and fertility. Their findings show that partnership stability and fertility increase in Poland if the first born is a boy.

This study intends to add to the scant literature on the topic in sub-Saharan Africa in general and Ghana in particular. The case of Ghana is peculiar since two forms of inheritance, patrilineal and matrilineal, each bring preferences for a particular sex. For instance the Ga-Dangbe, Ewe, Grussi, Gruma, Guan and Mole-Dagbani inherit patrilineally and therefore preference for a son is widespread. On the other hand, the Akan inherit matrilineally and prefer daughters. As a result, pressure is put on some couples (and particularly wives) by some husbands and in-laws to provide the family with children of the preferred sex. This creates tension in the family and some husbands go on to marry additional wives with the hope of getting a child of their preferred sex. Consequently, marriages become unstable, which affects the upbringing of children.

Educational attainment and sex preference

The level of education of parents, particularly maternal education, has been linked to differences in sex preference. Women or men with formal education tend to emphasize modernization and secular concepts as a potential stimulant to alter attitudes and demographic behaviours and outcomes. Formal education thus facilitates the spread of new ideas and information (Weeks 2008). Although educational attainment, especially maternal education, has been found to be negatively associated with family size, birth spacing and other fertility behaviours, the association observed between educational attainment and sex preferences for children in sub-Saharan Africa is not clear (Kravdal 2001; Fayehun et al. 2011; Kabano et al. 2013). This is due to the fact that preference for sons has been found among secondary and highly educated men and women (Mwageni et al. 2001; Eguavoen et al. 2007). On the other hand, Adeleye and Okonkwo (2010) reported no association between education and sex preferences for children in a peri-urban community in Edo State, Southern Nigeria.

In the light of the uniqueness of the Ghanaian inheritance system and its potential impact on sex preference, and the inconclusiveness of studies on educational

attainment and sex preference, this study seeks to answer the following questions: (i) Do highly educated Ghanaians prefer children of one sex over another? (ii) Are there any associations between the characteristics (especially ethnicity which is being used as a proxy for inheritance system) of Ghanaians and sex preferences for children?

Methods

Data

This study uses data from the the 2014 Ghana Demographic and Health Survey (GDHS). The GDHS is a nationally representative sample survey which is conducted every five years. The 2014 GDHS is the sixth round in the series and it covers information on demographic, socio-economic, health and fertility issues among men and women of reproductive ages (females: 15–49 years and males: 15–59 years). The 2014 GDHS followed a two-stage sample design to select respondents. The first stage involved selecting 427 clusters using an updated sampling frame from the 2010 Ghana Population and Housing Census. The second stage involved systematic sampling of households from the EAs. All households were randomly selected from the household listing operation conducted between January and March, 2014.

Eligible individuals in the selected households were identified and interviewed. The 2014 GDHS sampling procedure and methodology has been described in detail elsewhere (Ghana Statistical Service 2015).

The 2014 Ghana Demographic and Health Survey had a sample of 9396 women and 4388 men giving a total sample of 13,784 individuals. However the analysis of the current study was based on a sample size of 13,584 respondents who had valid information on all the variables used in the study.

Variables

Dependent variable

Sex preference for children was the dependent variable in the study. In the 2014 GDHS, men and women with living children were asked, "If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?" On the other hand, respondents without living children were asked, "If you could choose exactly the number of children to have in your whole life, how many would that be?" A follow up question was asked, "How many of these children would you like to be boys, how many would you like to be girls, and for how many would it not matter if it's a boy or a girl?" From responses of the follow up questions, a three-category variable measuring sex preference of children was created: 'son preference', 'daughter preference', and 'no sex preference'. All respondents who stated more sons than daughters were classified as having 'preference for sons', all those who stated more

daughters than sons were classified as having 'preference for daughters' and all who indicated equal numbers of sons and daughters are classified as having 'no sex preference'.

Independent variable

Level of education

Level of education was the main independent variable for the study. It was measured using the following categories: no education, Primary, Middle/Junior high, Secondary/Senior high and Higher education based on the question "Have you ever attended school?" If yes, "What is the highest level of school you attended?"

Control variables

Furthermore, some socio-demographic characteristics of respondents were controlled for. These include: sex, age, marital status, religion and place of residence, lineage, occupation and desired family size. Age is categorised into 10-year age groups (15–24 years, 25–34 years, 35–44 and 45 years and above). Place of residence of each respondent was measured as rural or urban.

The measure of lineage was defined with respect to ethnic identity; self-reported ethnic group was used to differentiate respondents as matrilineal or patrilineal. Eight main ethnic groups were recorded: Akan, Ga/Dangme, Ewe, Guan, Mole-Dagbani, Grussi, Gruma, Mande and a category for other ethnic group. The Akan group was classified as matrilineal while the non-Akan were classified as patrilineal. Marital status was categorized as not in union, currently married, living together/cohabiting and formerly married (divorced/separated/widowed). Religion was assessed using the question "What is your religion?" Possible categories were: Catholic, Anglican/Methodist/Presbyterian, Pentecostal/Charismatic, other Christian, Muslim, Traditional/spiritualist, No religion. These were re-categorised into four groups, namely: Christianity, Islamic, Traditional and No religion. With respect to occupational status, eight categories were available in the GDHS. These are: not working, Professional/technical/managerial, Clerical, Sales and Services, Skilled Manual, Unskilled manual, Agriculture self-employed and Agriculture. These were re-categorised into five groups: Professional/technical/managerial, Sales and services, Agricultural work, Manual work and Not working. Finally, the total desired family size of respondents was categorised as 0, 1, 2, 3, 4, 5 and 6+. However, at the multivariate level, two categories were created: odd number and even number.

Analytical model

In analysing the data, cross-tabulations using Chi square tests are employed to establish associations between the independent and dependent variables. Variables are considered significant at the 95% confidence level. A multinomial logistic model was used to assess the influence of educational status on sex preferences of children, controlling for other variables. The multinomial logistic approach is appropriate for

the analysis because sex preference was treated as a categorical dependent variable with three categories.

Results

Socio-demographic characteristics of respondents

Table 1 shows the socio-demographic characteristics of the respondents. A high proportion (41.7%) of the respondents had completed middle school and less than a tenth (8.2%) had higher education. More females (68%) were interviewed compared to males (32%). The mean age of the respondents was 30.6 years (range 15–59 years) while the mean desired family size was 4.1 children. The sample was predominantly Christians (77.8%) with a few (2.5%) practising Traditional religion. More than half (53.4%) of the respondents lived in urban areas and about half were of patrilineal descent. A high proportion (30%) of the respondents was involved in agricultural work with a few (9.1%) in sales and services.

With respect to sex preferences for children, more than half of the respondents had no preference with regard to the sex of a child. However, about one fifth (26.1%) indicated a preference for sons while 17.4% preferred to have daughters.

Bivariate analysis shown in Table 2 indicates the association between the study variables and sex preference. Higher educational attainment is associated with the lowest proportions of respondents with no sex preference (53.1%). As level of education increases, preference for daughters and sons also increases ($P < 0.001$). There is a significant association between gender and sex preference. Males constituted a higher proportion of those with a son preference (38.1%) and females constituted a higher proportion of those with a daughter preference (20.7%). As age increased, the reporting of no preference for the sex of a child also increased ($P < 0.001$). With respect to marital status, never married respondents constituted a higher proportion of those with a son preference (28.7%) as well as those with a daughter preference (19.9%). While a higher proportion of rural residents preferred to have sons (27%), daughter preference is higher among urban residents (18.1%; $P < 0.005$).

Comparably, son preference was higher among respondents in patrilineal lineages (27.4%) while daughters were preferred among those in matrilineal lineages (20.3%). Respondents who belonged to the Islamic religion constituted a higher proportion of those with a son preference (31%) and Christians constituted a higher proportion of those with a daughter preference (18.5%; $P < 0.001$). In addition, preference for a son was higher among agricultural workers (31.8%) while preference for a daughter was higher among those not working (22.4%). Finally, while a higher proportion of respondents with a desired family size of five preferred a son (50.6%), those with a desired family size of one had preference for a daughter ($P < 0.001$).

Table 1 Socio-demographic characteristics of respondents

Variables	Frequency N = 13,584	Percentage (%)
Education		
No education	2195	16.2
Primary	2212	16.3
Middle	5668	41.7
secondary	2401	17.7
Higher	1110	8.2
Sex		
Males	4353	32.0
Females	9231	68.0
Age	Mean age = 30.58	
15–24	4652	34.2
25–34	4078	30.0
35–44	3164	23.3
45+	1691	12.4
Religion		
Christianity	10,575	77.8
Islamic	2144	15.8
Traditional	346	2.5
No religion	519	3.8
Place of residence		
Urban	7250	53.4
Rural	6335	46.6
Lineage		
Matrilineal	6764	49.8
Patrilineal	6820	50.2
Marital status		
Not in union	4928	36.3
Currently married	5741	42.3
Living together/cohabiting	1726	12.7
Formerly married	1190	8.8
Occupation		
Professional/managerial/technical	2797	20.6
Sales and services	1234	9.1
Agricultural	4074	30.0
Manual	3074	22.6
Not working	2406	17.7
Desired family size	Mean = 4.11	
0	86	0.6
1	85	0.6
2	1182	8.7
3	3121	23.0

Table 1 continued

Variables	Frequency N = 13,584	Percentage (%)
4	4426	32.6
5	1830	13.5
6+	2856	21.0

Source: GDHS (2014)

Determinants of sex preferences

Table 3 shows a multinomial logistic regression analysis of the effect of educational attainment on sex preferences of children. Independently, education is associated with sex preferences for children. The Nagelkerke R^2 value (0.004) shows that educational level explains 0.4% of the variation in sex preference for children. This implies that 99.6% of the variation is due to other variables.

The results show that as educational level increased, the desire to have a son increased. For instance, individuals with secondary education were 14.6% more likely to have a preference for sons compared to those with no formal education ($P = 0.047$). On the other hand, preference for a daughter becomes more likely with each level of education. Compared to individuals with no formal education, those with higher education were 46.8% more likely to desire a daughter ($P = 0.000$).

The effect of education on sex preference remains fairly significant after controlling for other characteristics of the respondents (see Table 4). The direction of the association, however, changes: that is, there was less likelihood for preference for a son at each level of education. Individuals with primary education were 26.1% less likely to prefer a son compared to those with no education ($P = 0.032$). Similarly, highly educated individuals were 15% less likely to have preference for a son ($P = 0.114$).

With regard to the control variables, males were 117% more likely to prefer a son compared to females ($P = 0.000$) but 43.2% less likely to desire a daughter ($P = 0.000$). Compared to individuals of matrilineal lineages, those of patrilineal lineages were 43.2% less likely to have preference for a daughter ($P = 0.000$). Respondents who belonged to the Islamic religion were 30.3% more likely to have preference for a son compared to those practising Christianity ($P = 0.000$). With regards to occupation, respondents in Sales and services were less likely to have preference for a son or a daughter ($P < 0.05$). Agricultural workers were 38.3% more likely to prefer a son compared to those not working ($P = 0.000$). Respondents who expressed their desired family size as an odd number were more likely to have preference for a son as well as a daughter ($P = 0.000$).

Discussion

This study used data from the 2014 GDHS to assess the role of individuals' educational attainment on their sex preferences for children. This is in light of the scant research on the issue in spite of the divergent inheritance systems in the

Table 2 The association between socio-demographic factors and sex preference

Variables	Son (%)	Daughter (%)	No preference (%)	P value
Education		0.000		
No education	27.4	14.2	58.4	
Primary	23.7	17.8	58.5	
JHS/Middle	25.1	17.9	57.0	
Secondary	28.7	18.0	53.4	
Higher	28.0	18.9	53.1	
Sex		0.000		
Male	38.1	10.3	51.6	
Female	20.4	20.7	58.8	
Age		0.000		
15–24	27.3	20.7	52.0	
25–34	26.9	16.5	56.6	
35–44	23.6	15.2	61.1	
45+	25.4	14.6	60.0	
Marital status		0.000		
Never married	28.7	19.9	51.4	
Currently married	25.9	15.4	58.8	
Living together	22.2	17.8	60.0	
Formerly married	22.1	16.1	61.8	
Place of residence		0.012		
Urban	25.3	18.1	56.6	
Rural	27.0	16.5	56.5	
Lineage		0.000		
Matrilineal	24.8	20.3	54.9	
Patrilineal	27.4	14.5	58.1	0.000
Religion				
Christianity	24.9	18.5	56.6	
Islamic	31.0	12.9	56.1	
Traditional	27.2	13.6	59.2	
No religion	29.3	15.4	55.3	
Occupation		0.000		
Professional/managerial/technical	27.4	18.9	53.7	
Sales and services	20.3	18.2	61.5	
Agricultural	31.8	13.3	54.9	
Manual	28.6	14.7	56.7	
Not working	25.6	22.4	52.1	
Desired family size		0.000		
0	0.0	0.0	100	
1	23.8	36.9	39.3	
2	4.3	3.6	92.0	
3	46.7	36.5	16.8	

Table 2 continued

Variables	Son (%)	Daughter (%)	No preference (%)	P value
4	7.3	4.1	88.6	
5	50.6	34.3	15.1	
6+	26.9	12.0	61.2	

Source: GDHS (2014)

Table 3 Multinomial logistic regression of educational attainment and sex preferences of children

Variable	Sex preferences[a]			
	Preference for a son		Preference for a daughter	
	Exp. Beta	P value	Exp. Beta	P value
Intercept		0.000		
Level of education (ref = no education)				
Primary education	0.863	0.040	1.254	0.008
Middle /JSS	0.940	0.289	1.293	0.000
Secondary	1.146	0.047	1.389	0.000
Higher	1.123	0.176	1.468	0.000

Source: GDHS (2014). ref = reference category R C for [a] is 'no sex preference'

Nagelkerke R-squared: 0.004

country. The results indicate that there is a preference for sons compared to daughters. However, the finding that about one-fifth of the total respondents prefer a son is lower compared to the proportion reported in Southern Nigeria (36.6%) as well as in Tanzania (87%) (Adeleye and Okonkwo 2010; Mwageni et al. 2001). In sub-Saharan Africa, sons are mostly preferred because of certain social, financial and psychological utilities they provide (Mwageni et al. 2001). For instance, they are desired to ensure the continuity of the family name, inherit familial wealth and property and provide financial support, particularly during old age. Importantly, the presence of a son in a family enhances the prestige and power of the family in general and the virility of men in particular (Nnadi 2013).

The finding also shows that highly educated individuals have less likelihood of preference for a son or a daughter. This indicates that they are more likely to have no preference for the sex of a child. This supports other findings from India, South Korea and Egypt where preference for the sex of a child is low among individuals who have attained some level of education (Robitaille 2013; Clark 2000; El-Gilany and Shady 2007; Chavada and Bhagyalaxmi 2009). However, in some parts of sub-Saharan Africa, highly educated individuals have indicated a preference for sons over daughters (Eguavoen et al. 2007; Adeleye and Okonkwo 2010). This may be linked to the cultural and social significance placed on male children. The finding of an absence of sex preferences among individuals with some level of education signifies the importance of education on fertility related issues. Formal education

Table 4 Multinomial logistic regression of determinants of sex preferences of children

Variable	Sex preferences[a]			
	Preference for a son		Preference for a daughter	
	Exp. Beta	P value	Exp. Beta	P value
Intercept	0	0.000		0.000
Level of education (ref = no education)				
Primary education	0.739	0.032	0.837	0.268
Middle /JSS	0.848	0.080	1.102	0.375
Secondary	0.861	0.080	1.011	0.916
Higher	0.850	0.114	0.846	0.168
Sex (ref = female)				
Males	2.173	0.000	0.568	0.000
Age group (ref = 15–24 years)				
25–34	1.045	0.594	0.129	0.870
35–44	0.917	0.369	0.344	0.904
45+	0.962	0.727	1.166	0.226
Lineage (ref = Matrilineal)				
Patrilineal	1.035	0.546	0.758	0.000
Place of residence (ref = urban)				
rural	0.972	0.634	0.928	0.253
Religion (ref = Christianity)				
Islamic	1.303	0.000	0.950	0.581
Traditional	0.984	0.921	1.188	0.388
No religion	0.975	0.846	0.995	0.976
Occupation (ref = not working)				
Professional/managerial	0.795	0.066	0.880	0.348
Sales and services	0.815	0.014	0.741	0.001
Agricultural	1.383	0.000	0.972	0.784
Manual	0.904	0.270	0.839	0.087
Marital status (ref = not in union)				
Currently married	0.869	0.236	0.810	0.024
Living together	0.810	0.093	0.852	0.133
Formerly married	0.870	0.033	0.722	0.013
Desired family size (ref = even number)				
Odd number	23.812	0.000	31.324	0.000

Source: GDHS (2014). ref = reference category R C for [a] is 'no sex preference'

Nagelkerke R-squared: 0.481

plays an important role in knowledge transmission and cognitive development. It enables individuals to process a wide range of information and thus exposes them to new ways of thinking (Anyanwu et al. 2010). Education may create the awareness that both sexes are equally important to society. It may therefore transform the

individual's aspirations and eventually cause him/her to question traditional beliefs (Mwageni et al. 2001). Moreover, education delays marriage and childbirth and therefore the higher educated might not be much concerned about the sex of a child.

The finding further reveals that sex preference is gender-specific: males indicated a preference for sons while women tended to prefer daughters. This supports findings reported in sub-Saharan Africa (Adeleye and Okonkwo 2010; Adebowale and Palamuleni 2015), Canada and Nepal (Higginson and Aarssen 2011; Chhetri et al. 2011) where men and women indicated preferences for a child of their own sex. Generally, for the purposes of companionship, individuals would prefer a child of their own sex. Women tend to prefer daughters over sons because of perceived mother-daughter emotional affection (Chhetri et al. 2011). Daughters may also assist their mothers with household chores and care of younger children (Fuse 2013). On the other hand, sons are preferred by males for continuity of the family name (Mwageni et al. 2001).

The association between lineage and sex preference indicates that respondents who belong to patrilineal lineages prefer sons to daughters. This group traces their lineage to their father and therefore sons are valued as succession and inheritance devolves through the male line. In some Ghanaian systems, even with the dispensation of the Provisional National Defense Council (PNDC) Law 111, daughters are totally excluded. In other societies, both sons and daughters share the property, but the shares of the daughters are comparatively smaller (Nukunya 2003). For instance in the patrilineal society of Anlo, indigenous law and kinship based on socio-cultural practices tend to give more inheritance and property rights to men than to women. A son inherits from his father and a daughter from her mother. The principle therefore prohibits daughters from any share of their father's property (Gedzi 2012). On the other hand, in matrilineal societies, relatedness through females is treated as culturally more significant than relatedness through males. Consequently, men transfer wealth and political titles to their sisters' sons, hence the preference for a daughter (Holden et al. 2002). Among Asantes in Ghana, when a man dies intestate, his brothers and sisters are the first to inherit properties before his nephews and nieces. The widow and children are prohibited by the principle to have a share in the deceased man's property (Gedzi 2012). Women in matrilineal societies enjoy much more social security due to the matrilineal support system than those in patrilineal societies, as a result of the preference for daughters.

The finding that both daughters and sons are preferred among respondents who expressed their desired family size as an odd number is interesting but the reasons underlying this could not be explained in this study and therefore need further exploration. However, this can be linked to the high fertility rate in most sub-Saharan African countries. Individuals with a desire for an odd number of children and also a preference for a particular sex will continue with childbirth until the desire is met. Finally, it is evident from the results that the preference for a son is associated with being an agricultural worker more than with not working. Agricultural workers are presumed to have a preference for sons because sons often serve as heirs of land and assist in farming activities, thereby providing greater economic net utility compared to daughters (Weeks 2008; Robitaille 2012).

Limitations

The study has some limitations. The question which was used to determine preference for the sex of a child among respondents who had living children was in retrospect. This may mean that responses are not a true reflection of the sex preferences. Also, the use of self-reported ethnic group as a proxy to measure lineage is imperfect. This is because a small proportion of Akan is known to have bilateral inheritance. However, the format of the data does not allow us to disaggregate Akan subgroups sufficiently to capture this peculiarity. Despite these limitations, the findings of this study are comparable to findings from other studies and the study contributes to the fertility literature in Africa.

Conclusion

Findings from this study indicate an association between education attainment and sex preference for children. Highly educated individuals are more likely to indicate no preference for the sex of a child. This highlights the need to improve educational levels among individuals as this may affect fertility desires. As also found in this study, individuals who belong to patrilineal lineages prefer to have sons compared to those in matrilineal lineages. Preference for the sex of a child is also based on an individual's gender, and a desired family size expressed as odd number influences daughter preference. The prevailing reasons for these preferences could not be explained in this study due to data limitations. Future research should encompass qualitative data to help understand and explain these preferences.

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