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ORIGINAL RESEARCH

Ethnicity and fertility desires in Ghana

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Abstract

The extant literature shows that fertility desires are an important indicator for understanding and predicting the future course of fertility; however, little work has been done on its relationship to ethnicity among women in Ghana. Therefore, this study investigates the relationship between ethnicity and fertility desires among two groups of parous women in Ghana. Using 2014 Ghana Demographic and Health Survey data, analyses were conducted with 5548 women between ages 15 and 49 years. Respondents were divided into two groups: 1) women with 1–3 living children (n = 3437), and 2) women with 4 or more children (n = 2111), representing those with children below and above the wanted fertility rate, respectively. Descriptive analyses indicated that 77.5% of women in the lower parity group desired an additional child, whereas 23.6% of women in the higher parity group had the same desires. Binary logistic regression results showed that ethnicity was a significant predictor of fertility desires among the two groups of women. Additionally, ethnicity remained significant when socio-economic factors were controlled for. The study's findings refute the characteristics hypothesis, signifying that even though certain ethnic groups are assimilated into more modern socio-economic structures, they still maintain their pronatalistic beliefs. More specifically, Mole-Dagbani and "Other" women, who already have a high parity, are more likely to want an additional child. Further qualitative work is required to understand the norms, customs, practices, and beliefs that govern the major Ghanaian ethnic groups regarding their fertility desires and behaviour.

Keywords Ghana · Ethnic groups · Fertility desires · Wanted fertility

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Introduction

Most countries in sub-Saharan Africa experience high fertility and comprise large sized families, although in recent times conscious efforts are being made to reduce births (Garenne, 2008). Recent total fertility rate (TFR) estimates in the region are the highest globally at 4.9 births per woman (PRB 2018). There have been regional and global declines, yet fertility rates in sub-Saharan Africa are considerably higher than rates in other major world regions. Over the past three decades, trends show that Ghana has had a substantial decline in its TFR from 6.2 to 3.9 births. However, a stall, evidenced in 2003, has kept the rate at nearly double the replacement level. Further examination of the 2014 rates show that Ghanaian women desired to have an ideal number of 3.6 children, yet ended up having 0.6 children more children than they wanted. This implies that were they able to avoid unwanted births, the total fertility rate would be 17% lower (GSS, GHS, ICF International 2015). Consequently, the fertility trend evidenced a minor increase in the 2014 TFR, from 4.0 births per woman in 2008 to 4.2 births per woman in 2014, prior to declining to 3.9 births per woman in 2017 (GSS, GHS, ICF 2018). This, among other reasons, necessitated an exploration of the fertility desires of women in Ghana.

Past research findings on fertility have identified specific practices that influenced fertility among ethnic groups in Ghana. Postpartum abstinence, one such practice, has been a norm in some cultures used to space births and has varied across ethnic groups. For example, Gaisie (1968) observed that by tradition, Ewes were likely to abstain from sexual intercourse for 35 months following birth, while Akans were likely to desist from sexual intercourse for 30 months (Bleek, 1990). On the other hand, the Ga/Dangmes recommended that until the child was weaned, sexual intercourse should be refrained from (Kaye, 1962). Gaisie (1968) also found that Mole-Dagbani women would resume sexual activity as soon as possible even though sexual taboos against doing so remained.

Although the studies discussed above are quite dated, they provide an understanding of the differences in practices that then translate into fertility. However, more work remains to be undertaken to investigate the recent relationships between fertility-related behaviour and ethnicity among women in Ghana, especially because of the fertility stall. Fertility preference is seen as an important indicator of fertility; however, its relationship to ethnicity has rarely been assessed using recent nationally representative data. This current study examines the relationship between ethnicity and fertility desires of women in Ghana. The study goes further to assess this among two groups of parous women; those with their number of living children below the wanted fertility rate (1–3 children) and those with children above the wanted fertility rate (4 or more children). Women's preferences do differ by parity, thus, investigating fertility desires by women's high or low parity levels, separately, allows us to disentangle the aggregate data which may conceal important findings (Casterline & Agyei-Mensah, 2017). Splitting the women based on their parity enables us to identify the individual effects of ethnicity on fertility desires among both groups of women, who are quite different at that moment in time.

Ethnicity in Ghana

In Ghana, ethnicity refers to the ethnic group that a person belongs to (Ghana Statistical Service (GSS) 2012). There are five major ethnic groups in Ghana (Akan, Ewe, Ga/Dangme, Guan and Mole-Dagbani) of which the Akan ethnic group is the most dominant in terms of population size. There are other smaller ethnic groups: Ewe, Ga/Dangme, Mole-Dagbani, Guan, Grusi, Mande and the Gurma. The Mole-Dabgani, Grusi, Mande and Gurma ethnic groups are typically found in the northern part of Ghana, whereas the Akan, Ewe, and Ga/Dangme ethnic groups tend to reside in the southern and middle parts of the country. The Guans are a unique group that migrated, settled, and assimilated into areas across Ghana; and can be found in the Central, Eastern, Volta, and Northern regions (GSS 2012). Ghana is an ethnically heterogeneous country with urban centres being the most ethnically mixed. The 2010 Population and Housing Census results point to Accra as a meeting point for all the ethnic groups in Ghana (GSS 2012). These groups have various fertility-related beliefs, customs, and traditions, and consequently have adopted differing strategies in relation to abstinence, postpartum abstinence, traditional and modern contraceptive use, and abortion.

Ethnicity "theories" related to the components of demography

Available literature suggests that when it comes to demographic behaviour, researchers have interpreted ethnic differences by using three hypotheses, which are: the characteristic, the norms/cultural and the minority-group hypotheses (Addai & Trovato, 1999; Addai, 1999a, 1999b; Goldscheider, 1971; Kollehlon, 1989; Nahmias, 2007). The characteristic hypothesis postulates that ethnic group differences in demographic behaviour are explained by socio-economic factors (Addai & Trovato, 1999; Addai, 1999a, 1999b; Goldscheider, 1971; Nahmias, 2007; Palamuleni, 2014). The cultural hypothesis, on the other hand, assumes that ethnic group differentials in demographic behaviour, especially fertility, may be alluded to by the diverse norms, values, and attitudes among the ethnic/groups (Palamuleni, 2014). The third hypothesis, minority-group hypothesis, is similar to the characteristic hypothesis which posits that the differences that exist between the majority and minority groups in a society or an area can be explained by socio-economic and demographic factors (Kollehlon, 1989). In this study, we apply the three hypotheses to see which best explains the variations in demographic behaviour. In addition to the characteristics, cultural and minority-group hypotheses, the study adopts Pullum's (1980) conceptual framework on fertility desires. In his model, Pullum (1980) posits that women have fertility preferences at different time points in their lives, and these preferences tend to influence their family size (Pullum, 1980; as cited in Mashara, 2016). These preferences, together with their current family size, guide them in their statements regarding preference for additional children.

Pullum's framework represents the relationship over time between four factors: the initial preference, actual family size, any related controls, and contraceptive use

patterns (Pullum, 1980; as cited in Mashara, 2016, p.2433). It shows that there exists a relationship between fertility preference and other demographic, socio-cultural and socio-economic variables. We modify Pullum's (1980) framework in this study to establish the relationship between ethnicity and fertility desires in Ghana. One modification is to acknowledge partner's preference which is a key contributor to fertility in this context and may indirectly influence women's fertility preference.

Hypotheses The study seeks to test four hypotheses based on an understanding of relationships in the literature. First, extant studies suggest that Ewe and Ga/Dangme women are not as pronatalist as Akan and Mole-Dagbani (northern dwellers) women because of certain cultural factors. For example, Akans are the only matrilineal[1] ethnic group in Ghana and reside in southern and middle parts of the country. Akans had a cultural practice of celebrating men who contributed to a woman's clan by helping her bear ten children (Agyei-Mensah, 2006). Mole-Dagbanis comprise people adhering to the Muslim faith, have polygamous marriage patterns, and primarily agriculturally based livelihoods in the northern part of Ghana. On the other hand, Ga-Dangmes reside in Greater Accra and parts of the Eastern Region, which have urban characteristics and conditions. Ga/Dangme customs entail early childbearing, and duolocal marriage living arrangements. Ewes also have most of their population residing in rural parts of southern Ghana. These reasons could indicate why the latter ethnic groups are less inclined to desire an additional child, especially having achieved desired fertility. Overall, Mole-Dagbani women may desire more children, despite achieving the average wanted fertility rate, due to the many factors that encourage pronatalism. Thus, we test for significant associations among those with a parity of four and above. Based on this we propose the first hypothesis:

1. *Mole/Dagbani women in the 4 + parity group are more likely to desire an additional child than Akan women.* Second, based on the literature, we propose a second hypothesis to understand another cultural dynamic, religion. Studies highlight the pronatalism of Muslims compared to Christians, and thus may be more likely to desire an additional child (Falola, 2001; Muhoza et al., 2014; Susuman et al., 2014; Tadesse & Asefa, 2001). We test the following hypothesis among both groups of parous women.
2. *Women who belong to the Islamic religion in both parous groups are more likely to desire an additional child than Catholics.* The study also tests a third hypothesis in relation to partner's desires for additional children. We understand that in the sub-Saharan African context, the payment of bride wealth represses women's reproductive autonomy, transferring it to their partners. This may not only be true for actual fertility but may also be true for their desires. We seek to test this third hypothesis among women with below wanted fertility as the effect may be stronger among this group.

[1] Patrilineal Akans are known to reside in Mampong, Eastern Region, however, they comprise a minority and tradition suggests that they derive roots from the Guans.

3. *Women in the 1–3 parity group whose husbands/partners want fewer children are more likely to desire an additional child than when both want same.* Finally, according to the characteristics and minority group hypotheses, socio-economic status may be more important in determining fertility desires than ethnicity. We therefore seek to test this final hypothesis.
4. *Among women in both parity groups, those in the wealthier quintiles are less likely to desire an additional child than those in the poorest quintile, while ethnicity is not seen as a significant predictor of fertility desires.*

Materials and methods

Data and study sample

The study utilises data from the 2014 Ghana Demographic and Health Survey (GDHS). This is a nationally representative survey carried out by the Ghana Statistical Service (GSS) every five or six years since 1988, in collaboration with other stakeholders such as the Ministry of Health, the Ghana Health Service, and ICF International. The survey consists of information from male and female respondents in the reproductive age groups residing in sampled households. They were interviewed to gain insights on household, socio-demographic, socio-economic and socio-cultural characteristics, maternal and child health, nutrition, fertility, contraceptive use, gender, and reproductive health, to name a few. The 2014 GDHS was chosen for this study because it is the most recent demographic and health survey conducted in Ghana. The national representativeness of the survey and the rigorous data collection techniques used also informed the choice of the survey's data for the study. The Ghana Health Service Ethics Review Committee and the Institutional Review Board for ICF International provided ethical clearance for the study. Informed consent was obtained from all respondents.

This paper focuses on women in the major ethnic groups between ages 15 and 49 years and their desire for an additional child. The women's data file was utilised in this study and various groups of women, primarily nulliparous women, as well as those with missing cases on key variables were excluded from the dataset which was weighted to obtain a total sample size of 5548 women. The weighting procedure ensured biases from the sampling strategy due to the survey design were accounted for. The respondents were spilt into two groups: the first consisted of women with 1–3 living children, resulting in a sample of 3437 women. The second group consisted of women with 4 or more living children, with a sample size of 2111. The study used information on the demographic, social and economic characteristics of the women.

Measurements

Dependent variable

The dependent variable is the woman's desire for an additional child. The respondents were asked the question: "*Would you like to have another child or would you prefer not to have any (more)*?" Responses to this question were: "wants to have another", "undecided", "wants no more", "sterilized (respondent or partner)", and "infecund". The responses were finally recategorised into a dichotomous variable: Yes (wants another) and No (wants no more). Respondents who reported wanting another child were coded as "1" (the event of interest), and those who did not were coded as "0" (the reference category). There were 577[2] respondents who were undecided about their desire for another child while others reported being infecund (n = 219). The infecund women were removed from the dataset since they could not have children. Those who were undecided were not certain whether they wanted another child, and thus these women were also excluded from the dataset (see Ekane, 2016). Women who reported that they or their husband/partner was sterilised were added to the "No" category since they had used a permanent method to avoid additional childbearing (Ekane, 2016).

Independent variable

The independent variable is the ethnicity of the woman. The respondents were asked the question: "*To which ethnic group do you belong*?" of which they answered Akan, Ga/Dangme, Ewe, Mole-Dagbani, Guan, Grussi, Mande, Gurma and Other. For the purposes of this study, this ethnicity variable was recoded into five categories, representing the major ethnic groups: Akan, Ga/Dangme, Ewe, Mole-Dagbani and "Other". The "Other" ethnic group includes Guan, Grussi, Gurma, Mande and Other categories. This variable constitutes the main independent variable.

Control variables

Socio-demographic and economic variables believed to influence the relationship between ethnicity and fertility desire were also considered in the study (Ekane, 2016; Mashara, 2016). *Contraceptive use* was classified into three categories: no method, traditional (which includes folkloric) and modern methods. *Women's occupational status* was classified into two categories: agricultural, and non-agricultural. *Husband's/partner's occupational status* was also classified into three categories: agricultural, non-agricultural and no partner (for women with no partners). *Women's highest level of education* was classified as follows**:** no education, primary

[2] Frequencies were run with the 577 undecided women and findings indicate them to be similar to the women used for the final analysis on key variables. Slight differences were seen with regards to the wealth of 1–3 parity women who had higher proportions in the middle and richer groups and a smaller proportion in the richest group. In addition, those with no partners were a slightly higher percentage for both groups of women.

education, junior secondary/high school education and secondary or higher education. *Place of residence* was measured as urban and rural. *Religion* was categorised as Catholic, Protestant, Pentecostal/Charismatic, Islam, and Other. *Wealth quintile* was classified into five categories ranging from poorest to richest. *Husband/partner's desire for children* was classified into four groups: husband wants more children, husband wants fewer, both want the same, no partner. The *survival of last birth* variable was classified into yes and no categories. The *respondent's age* was collected as a continuous measure; however, for this study it was categorised into two age groups (15–34 and 35 + years). Finally, *previous child's age (in years)* was categorised as follows: < 5, 5–9 and 10 + .

Data analysis

For the statistical analyses, we used the statistical analysis software package, IBM SPSS Statistics version 20.0. The GDHS dataset was weighted using the "weighting cases" function on SPSS. The selected variable for weighting was the sample weighting variable "v005" divided by 1,000,000. Univariate analysis comprised an assessment of frequencies of all variables. Bivariate analysis involved generating cross-tabulations to relate ethnicity as well as other demographic, social and economic variables to fertility desires. Chi-square tests indicated statistically significant associations between ethnicity and control variables, and fertility desires. At the multivariate analysis level, binary logistic regression models were conducted to determine associations between ethnicity and fertility desires, as well as to assess which control variables were significantly associated with a woman's desire for an additional child. Two models were run: the first model predicted the role of ethnicity on the fertility desires of the two groups of women, to examine the independent effect on the dependent variable. The second model examined the influence of all the control variables and the independent variable on the dependent variable. All analyses were conducted separately for the two parity groups.

Limitations of the study

The quality of the research is as good as the vital statistics provided by the 2014 GDHS, such that inadequate data on certain variables, like "desire for children", limited the scope and objective of the study. In addition, social desirability bias may have affected the validity of responses from respondents. Respondents may have responded inaccurately to some of the sensitive questions to present themselves in the best possible light. Furthermore, because of inter-ethnic marriage, women may align themselves with more than one ethnic group. To mitigate this, we assumed that people reported the ethnic group they identified with and thus followed those customs. The literature on multiple ethnic-racial identity suggests that at some point, those with multiple ethnic or racial identities align with one ethnic or racial group, usually the minority group (Cardwell, Soliz, Crockett, & Bergquist, 2020). In Ghana, individuals belonging to multiple ethnic groups may adopt one based on

the patrilineal or matrilineal systems of inheritance in that culture (Awusabo-Asare, 1990).

With regards to sample size limitations, those in the initial "Other" ethnicity category were too small to have been left as a category. A larger sample would have enabled us to explore all ethnic groups separately and their desires for an additional child. In relation to that, the categories for some of the variables, mostly among women in the parous group of 4 and above, had very low frequencies. For example, age of woman, husband's occupation, education, and husband's desire (for both parous groups). These had categories merged with others to increase the sample sizes.

Results

Descriptive statistics

The percentage distributions of women in the two parity groups by background characteristics are reported in Table 1. There were some differences between the two groups of women especially in relation to their desire for more children, contraceptive use, occupation, partner's occupation, age, educational attainment levels, place of residence and household wealth status. The pattern indicates an older, uneducated, rural, poorer, agricultural sample in the higher parity group compared to the 1–3 parity sample.

About three out of four women in the 1–3 parity group desired another child while approximately one-quarter in the four and above parity group stated the same. Additionally, proportions of women in the various ethnic groups were similar for both parous groups. With both respondents' and partners' occupations there were higher proportions of women employed in the agricultural sector in the higher parity group. Significant differences between the two parity groups were seen in the place of residence, wealth, age, and education.

Bivariate analyses are presented in Table 2. Results show a statistically significant relationship between the ethnicity and fertility desires among women in both parity groups. The results clearly illustrate about 89 per cent of women in the first group (women with 1–3 children) who belonged to the "Other" ethnic group desired an additional child. This was followed by women in the Mole-Dagbani ethnic group, represented by about 88 per cent. The ethnic group with the smallest proportion was Ga/Dangmes with about 64 per cent desiring another child. The results also indicate that about 47 per cent of women in the higher parity group (women with 4 + children) who belong to the "Other" ethnic group desired an additional child. This was followed by women in the Mole-Dagbani ethnic group (41%). The ethnic group with the least proportion desiring another child was the Ewes (13%).

Other interesting results from the bivariate analyses indicate religion, age of the most recent birth, place of residence, respondent's age and educational level, wealth quintile, and respondents and partner's occupations were predictors of a woman's fertility desires.

Table 1 Demographic, socio-economic and socio-cultural characteristics of all women

Variables	Respondents with parity 1–3		Respondents with parity 4 +	
	Percent	Number	Percent	Number
Desire for an additional child				
Yes	77.5	2662	24.0	499
No	22.5	775	76.0	1612
Ethnicity				
Akan	50.6	1738	48.0	1013
Ga/Dangme	8.0	274	6.3	133
Ewe	14.3	490	12.7	268
Mole Dagbani	14.0	479	16.8	355
Other	13.2	455	16.2	342
Last child's age				
< 5	68.7	2363	61.3	1295
5–9	17.4	598	24.2	512
10 +	13.9	477	14.4	305
Contraceptive use				
No method	73.3	2519	71.0	1500
Traditional	4.7	162	3.6	76
Modern	22.0	756	25.4	535
Woman's occupation				
Agriculture	15.8	544	38.6	814
Non-agriculture	84.2	2893	61.4	1297
Husband's occupation				
Non-agriculture	54.1	1860	39.0	823
Agriculture	18.7	644	47.7	1007
No partner	27.1	933	13.3	281
Place of residence				
Urban	56.4	1942	39.4	833
Rural	43.6	1495	60.6	1279
Religion				
Catholic	9.6	332	9.7	204
Protestant	14.5	500	10.4	220
Pentecostal/Charismatic	58.2	2000	53.1	1122
Islam	13.6	467	17.8	375
Other	4.1	140	9.0	190
Wealth quintile				
Poorest	13.5	464	25.5	539
Poorer	14.3	492	26.3	554
Middle	21.8	748	21.3	451
Richer	24.1	828	15.2	321
Richest	26.3	905	11.7	247
Husband's desire				
Both want same	35.0	1204	38.3	810

Table 1 (continued)

Variables	Respondents with parity 1–3		Respondents with parity 4+	
	Percent	Number	Percent	Number
Husband wants more	16.8	579	22.6	810
Husband wants fewer	7.9	271	8.0	169
No partner/Don't know	40.2	1383	31.0	654
Survival of last birth				
No	2.1	73	4.1	85
Yes	97.9	3364	95.9	2026
Age of woman				
15–34	72.9	2507	23.7	500
35+	27.1	930	76.3	1611
Highest level of education				
No education	18.0	620	38.7	818
Primary	15.9	546	23.2	489
JSS/JHS	46.4	1596	33.8	714
Secondary/Higher	19.6	675	4.3	91
Total	100.0	3437	100.0	2111

Source Ghana Demographic and Health Survey, 2014

Regarding religion, about 90 per cent of Muslim women in the first parity group desired an additional child while Protestants were the smallest proportion of women desiring an additional child (70.1%). A similar pattern resulted for the women with a higher parity as a higher proportion of Muslim women desired an additional child compared to Protestants.

Husband's fertility desires and the survival status of the last child were significantly associated with fertility desires for only the higher parity women. Regarding partner's desires, among the women with 4+children, about 33 per cent whose husbands wanted fewer children desired an additional child while 14 per cent of women who did not have a partner or did not know their partner's desires reported the same. Also, women whose husbands wanted the same numbers as the respondent were about 24 per cent, whereas husbands who wanted more were about 34 per cent. The overall pattern suggests that greater percentages who report their husbands wanting fewer children stated they wanted an additional child.

Multivariate analyses

The multivariate analyses are presented in Table 3. In the first model, the dependent variable (fertility desires) is regressed on the independent variable (ethnicity). The results for the lower parity group indicate that Ga/Dangme women were 0.42 times less likely to desire an additional child as compared to Akan women. Also, Mole-Dagbani women and women who belonged to the "Other" ethnic group are 1.49 and 1.61 times more likely, respectively, to desire an additional child compared to Akan

Table 2 Bivariate relationships between ethnicity and control variables with fertility desires by women's parity

Variables	Desire for another child for respondents with parity 1–3 (%)		Desire for another child for respondents with parity of 4 + (%)	
	Yes	Number	Yes	Number
Ethnicity				
Akan	75.1	1738	13.7	1013
Ga/Dangme	63.5	274	17.3	133
Ewe	72.4	490	12.7	268
Mole-Dagbani	88.3	479	40.8	355
Other	88.8	455	46.5	342
Total	77.5	3436	23.7	2111
	$\chi 2 = 108.753$; $df = 4$; p value < 0.001		$\chi 2 = 232.819$; df = 4; p value < 0.001	
Last child's age				
< 5	81.0	2363	30.5	1295
5–9	81.4	597	14.5	512
10 +	55.0	476	9.8	305
Total	77.5	3436	23.6	2111
	$\chi 2 = 159.359$; $df = 2$; p value < 0.001		$\chi 2 = 89.947$; df = 2; p value < 0.001	
Contraceptive use				
No method	77.8	2519	24.4	1500
Traditional	75.5	163	19.7	76
Modern	76.7	756	22.1	535
Total	77.5	3436	23.6	2111
	$\chi 2 = .786$; $df = 2$; p value $= 0.675$		$\chi 2 = 1.865$; df = 2; p value $= 0.394$	
Place of residence				
Urban	74.2	1942	19.7	833

Table 2 (continued)

Variables	Desire for another child for respondents with parity 1–3 (%)		Desire for another child for respondents with parity of 4 + (%)	
	Yes	Number	Yes	Number
Rural	81.7	1495	26.2	1279
Total	77.5	3437	23.6	2112
	$\chi2 = 26.993$; $df = 1$; p value < 0.001		$\chi2 = 11.828$; df = 1; p value < 0.001	
Age of woman				
15–34	85.8	2507	41.4	500
35 +	55.1	930	18.1	1611
Total	77.5	3437	23.6	2111
	$\chi2 = 366.232$; $df = 1$; p value < 0.001		$\chi2 = 114.513$; df = 1; p value < 0.001	
Highest level of education				
No education	84.4	620	33.7	818
Primary	78.9	546	18.6	489
JSS/JHS	75.3	1596	16.2	715
Secondary/Higher	75.0	675	17.8	90
Total	77.5	3437	23.6	2112
	$\chi2 = 24.181$; $df = 3$; p value < 0.001		$\chi2 = 76.616$; df = 3; p value < 0.001	
Wealth quintile				
Poorest	89.4	464	41.1	538
Poorer	82.1	492	17.9	554
Middle	76.9	748	17.8	450
Richer	76.3	828	13.7	321
Richest	70.3	905	21.9	247
Total	77.5	3437	23.6	2110

Table 2 (continued)

Variables	Desire for another child for respondents with parity 1–3 (%)		Desire for another child for respondents with parity of 4 + (%)	
	Yes	Number	Yes	Number
	$\chi2 = 71.728$; $df = 4$; p value < 0.001		$\chi2 = 127.530$; df = 4; p value < 0.001	
Religion				
Catholic	76.2	332	24.5	204
Protestant	70.1	499	15.0	220
Pentecostal/Charismatic	75.8	1999	16.0	1122
Islam	90.8	467	44.3	375
Other	86.3	139	36.3	190
Total	77.5	3436	23.6	2111
	$\chi2 = 72.654$; $df = 4$; p value < 0.001		$\chi2 = 150.568$; df = 4; p value < 0.001	
Woman's occupation				
Agriculture	81.8	544	29.1	814
Non-agriculture	76.6	2893	20.2	1297
Total	77.5	3437	23.6	2111
	$\chi2 = 7.003$; $df = 1$; p value $= 0.008$		$\chi2 = 22.021$; df = 1; p value < 0.001	
Husband's occupation				
Non-agriculture	74.6	1860	19.7	823
Agriculture	84.6	644	30.9	1006
No partner	78.2	933	8.9	281
Total	77.5	3437	23.6	2111
	$\chi2 = 28.166$; $df = 2$; p value $= 0.000$		$\chi2 = 70.539$; df = 2; p value $= 0.000$	
Husband's desire				
Both wants same	77.5	1204	23.6	810

Table 2 (continued)

Variables	Desire for another child for respondents with parity 1–3 (%)		Desire for another child for respondents with parity of 4 + (%)	
	Yes	Number	Yes	Number
Husband wants more	75.3	579	33.7	478
Husband wants fewer	83.3	270	32.5	169
No partner/Don't know	77.2	1383	14.0	655
Total	77.4	3436	23.6	2112
	$\chi 2 = 6.951$; $df = 3$; p value = 0.073		$\chi 2 = 67.553$; df = 3; p value < 0.001	
Survival of last birth				
No	71.2	73	10.6	85
Yes	77.6	3364	24.2	2026
Total	77.5	3437	23.6	2111
	$\chi 2 = 1.651$; $df = 1$; p value = 0.199		$\chi 2 = 8.356$; df = 1; p value = 0.004	

Source Ghana Demographic and Health Survey, 2014

Table 3 Binary logistic regression models indicating relationships between ethnicity, control variables and fertility desires by women's parity

Variables	Model 1		Model 2	
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
	1–3 parity group	4 + parity group	1–3 parity group	4 + parity group
Ethnicity	1.00	1.00	1.00	1.00
Akan (RC)	0.58*** [0.44, 0.76]	1.28 [0.79, 2.10]	0.61** [0.45,0.81]	1.27 [0.75,2.15]
Ga/Dangme	0.87 [0.69, 1.10]	0.92 [0.61, 1.37]	0.82 [0.64,1.04]	0.77 [0.50,1.18]
Ewe	2.49*** [1.85, 3.36]	4.32*** [3.27, 5.70]	1.24 [0.83,1.87]	2.19*** [1.49,3.22]
Mole-Dagbani	2.61*** [1.91, 3.56]	5.46*** [4.14, 7.21]	1.68** [1.16,2.43]	2.94*** [2.05,4.22]
Other				
Last child's age			1.00	1.00
< 5 (RC)			1.86*** [1.42,2.43]	0.62** [0.46,0.85]
5–9			0.85 [0.64,1.12]	0.52** [0.33,0.81]
10 +				
Contraceptive use			1.00	1.00
No method (RC)			0.91 [0.61,1.37]	1.33 [0.71,2.51]
Traditional			0.77 [0.62,0.96]	1.00 [0.77,1.32]
Modern				
Place of residence			1.00	1.00
Urban (RC)			1.17 [0.91,1.50]	1.12 [0.80,1.56]
Rural				
Age of woman			4.50*** [3.60,5.62]	2.72*** [2.09,3.55]
15–34			1.00	1.00
35 + (RC)				
Highest level of education			1.00	1.00
No education (RC)			0.92 [0.66,1.30]	0.86 [0.61,1.20]
Primary			0.97 [0.71,1.31]	0.85 [0.60,1.21]
JSS/JHS			1.01 [0.70,1.45]	0.66 [0.34,1.29]
Secondary/Higher				

Table 3 (continued)

Variables	Model 1		Model 2	
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
	1–3 parity group	4 + parity group	1–3 parity group	4 + parity group
Wealth quintile			1.00	1.00
Poorest (RC)			0.83 [0.54,1.27]	0.60** [0.43,0.83]
Poorer			0.67 + [0.43,1.04]	0.85 [0.57,1.26]
Middle			0.74 [0.46,1.20]	0.61 + [0.36,1.03]
Richer			0.66 [0.39,1.10]	1.54 [0.85,2.79]
Richest				
Religion			1.00	1.00
Catholic (RC)			1.08 [0.76,1.54]	1.02 [0.59,1.75]
Protestant			1.25 [0.92,1.70]	0.91 [0.60,1.37]
Pentecostal/Charismatic			2.78*** [1.75,4.43]	2.29*** [1.48,3.54]
Islam			2.13* [1.17,3.87]	1.41 [0.85,2.34]
Other				
Woman's occupation			0.82 [0.59,1.14]	1.06 [0.79,1.42]
Agriculture			1.00	1.00
Non-agriculture (RC)				
Husband's occupation			1.00	1.00
Non-agriculture (RC)			1.36 + [0.98,1.89]	1.34 + [0.97,1.86]
Agriculture			1.64** [1.21,2.24]	0.99 [0.56,1.74]
No partner				
Husband's desire			1.00	1.00
Both wants same (RC)			0.75* [0.58,0.97]	1.28 + [0.96,1.71]
Husband wants more			1.73** [1.19,2.51]	1.89** [1.26,2.83]
Husband wants fewer			0.77 + [0.58,1.03]	0.68* [0.48,0.96]
No partner/Don't know				

Table 3 (continued)

Variables	Model 1		Model 2	
	OR [95% CI]	OR [95% CI]	OR [95% CI]	OR [95% CI]
	1–3 parity group	4 + parity group	1–3 parity group	4 + parity group
Survival of last birth			1.00	1.00
No (RC)			1.22 [0.69,2.15]	2.08 + [0.99,4.38]
Yes				
Model chi-square (df)	114.991 (4)	221.563 (4)	509.440(28)	445.595(28)
-2 Log Likelihood	3554.314	2087.487	3159.866	1863.454
Nagelkerke R^2	0.050	0.150	0.210	0.286
Percent of correct predictions	77.5	76.4	78.6	80.6

Source Ghana Demographic and Health Survey, 2014

RC Reference Category, *OR* Odds Ratio, *CI* Confidence Interval

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; +$p < 0.10$

women. Whereas in the higher parity group, Mole-Dagbani women and women who belonged to the Other ethnic group were 3.32 and 4.46 times more likely, respectively, to desire an additional child compared to the Akan women.

The second model shows binary logistic regression analysis results for ethnicity, desire for more children and all covariates among women. Among the first (lower parity) group, Ga/Dangme women were 39 per cent less likely than Akans to desire an additional child. Additionally, women who belonged to the "Other" ethnic group were 68 per cent more likely than Akan women to desire an additional child. Among the second (higher parity) group, Mole-Dagbani women were 119 per cent more likely to desire an additional child compared to their counterparts in the Akan ethnic group. Also, women who belonged to the "Other" ethnic group were 194 per cent more likely compared to Akan women to desire an additional child.

Religion was significant in both parity groups. In the first group, women who belonged to the Islamic religion were 178 per cent more likely to desire an additional child compared to Catholic women, whereas women in the "Other" category were 113 per cent more likely to desire an additional child compared to Catholic women. In the second group, it was only being Muslim that was associated with the likelihood of desiring an additional child. Muslim women were 129 per cent more likely to desire an additional child compared to Catholic women.

Husband/partner's desire was also a significant variable for both groups. Among women in the first group, those whose husbands wanted more children had lower odds of wanting an additional child compared to the reference category (both want same). Also, women who perceived their husband wanted fewer children had higher odds compared to the reference category (both want same). Among those in the second group, women whose husbands wanted fewer children had higher odds compared to the reference category, whereas women with no partner or did not know their husband's desires had lower odds compared to the reference category (both want same). Thus, among both groups, women who perceived their husbands to want fewer children than themselves were more likely to want an additional child.

The most recent child's age was also significant in both categories. Women in the "below wanted fertility" group who had children between ages 5 and 9 years had higher odds compared to the reference category (< 5 years). In contrast, women in the four years and above family size category who had children in the 5–9 year age group had lower odds compared to the reference category (< 5 years). Also, women whose children were in the 10 + age group had lower odds compared to the reference category (< 5 years).

Current age of a woman was also another variable that was significant in both groups. Women in the lower parity group, who belonged to the age group 15–34 years, were three and a half times more likely to desire an additional child when compared to women in the 35 + age group. Women in the higher parity group, who belonged to the age group 15–34 years were also more likely to desire an additional child compared to women in the 35 + group.

It is worth noting that husband's occupation and contraceptive use were significant only among women in the first group. Women with no partner were more likely to desire an additional child than those in non-agricultural occupations. Also, women who used modern contraceptive methods were less likely to desire an

additional child. Finally, wealth quintile was significant only among those in the four or more living children group. We see that poorer women were less likely to want another child compared to the poorest women.

Discussion

The aim of the study was to examine the relationship between ethnicity and fertility desires among two parous groups of women in Ghana. More specifically, the study identified relationships between ethnicity and fertility desires among two groups of women whose number of living children were below and above wanted fertility in Ghana. The study sought to investigate whether fertility desires differed by parity among women in Ghana, as well as to examine how ethnicity and other socio-demographic, socio-economic and socio-cultural and partner-related factors influenced a woman's intention to have another child in Ghana. Findings from analysis at the multivariate level suggest that ethnicity was a significant predictor of fertility desires among the two groups of women signifying deeper cultural undertones as influencing the desire for more children. The findings also imply that the characteristic, as well as the minority-group hypotheses, do not seem to play a role in fertility desires among women in Ghana. Wealth status was only significantly associated with fertility desires for the higher parity women, and for these women the poorer were less likely to desire another child than the poorest. The wealthier women were not less likely to desire another child than the poorest. Hence, it is the cultural/norms hypothesis that plays a key role in the fertility desires among women in Ghana. The findings also support Pullum's model, in which he posits that a woman's culture/norms coupled with certain characteristics (child's age, woman's age, religion, partner's fertility desire, and her number of living children) play a role in her fertility decision-making and desires (Mashara, 2016; Pullum, 1980).

We consistently find in the first model that women in the "Other" group as well as Mole/Dagbani are more likely to desire more children than Akans. The "Other" group consists of the Gruma, Mande, Grussi Guan and other minor (smaller) groups which tend to be located in the northern part of Ghana along with the Mole-Dagbani. Majority of the ethnic groups in the north of Ghana are predominantly Muslims and farmers. The literature suggests that Muslims have a higher desire for children. These studies tend to suggest that the Islam religion allows for polygamy and abhors the use of contraception; hence the desire for more children (Biney et al., 2021; Falola, 2001). Also, literature suggests that women who work in agriculture have a high desire for additional children. A study conducted in Nigeria among the Yoruba found that, desired fertility was higher when individuals or couples worked in the agricultural sector (Bankole, 1995). Ga/Dangmes among the lower parity group were found to be less likely, compared to Akans, to desire an additional child. This is coterminous with the study by Opoku (2014), who found that women's fertility preferences were higher among the Akans and lowest among the Ga/Dangmes. The reason for this could be associated with them being located in southern part of Ghana, which in turn predisposes them more to the effect of urbanisation and modernisation. Also, the results of a study in Ghana showed that Ga/Dangmes were the

most educated, followed by the Akans (Addai & Trovato, 1999). From the literature we know that education is inversely related to fertility desires, therefore that may be a reason why Ga/Dangmes in the lower parity group are less likely to desire an additional child compared to Akans.

In the second model we still find that in the lower parity group, Ga/Dangmes are less likely to desire an additional child compared to the Akans. Apart from the reasons mentioned above, this finding could be as a result of certain cultural factors. For instance, Akans are likely to desist from sexual intercourse for only two and half months following birth (Bleek, 1990). On the other hand, Ga/Dangmes recommend that until the child is weaned, sexual intercourse should be refrained from (Kaye, 1962). Also, Akans are more likely to desire an additional child than Ga/Dangmes by virtue of their matrilineality; which has a more liberal stance to the ideals of having children. Thus, based on some customs of the Ga/Dangmes, they are not as pronatalist as the Akans, Mole-Dagbanis and the "Other" groups. Mole-Dagbanis in the higher parity group are more likely to desire an additional child than Akans, suggesting they place a higher value on children and see them as a source of labour, social security, and intergenerational support (Biney et al., 2021; Mashara, 2016). This finding confirmed the first hypothesis of the study. We also see that those in the "Other" ethnicity category for both the parous groups are more likely to desire an additional child than the Akans. As has been stated earlier, the "Other" ethnic group are mainly made up of the northern tribes similar to the Mole-Dagbanis in terms of their desires for a high parity.

Religion was also associated significantly with a woman's desire to have an additional child among the two groups of parous women. Women in the "Other" religious group (for those in the 4+parity group) were more likely to desire an additional child than Catholics. We see that women from both parous groups who were Islamic were more likely to desire more children compared to Catholics. This finding confirmed the second hypothesis of the study. The literature suggests that individuals who belong to the Islamic religion desire more children. The Islamic religion allows for polygamy; and it is clear that polygyny has been an accepted system of marriage by Muslims. The knowledge that women may have to "live with the fear that they would have to face competition for attention and resources with their co-wives" (Wawire et al., 2013, p. 13) may play a role in their fertility desires. Thus, the insecurities resulting from competition in the polygynous relationship, which may impinge on the resources made available to them and their children, may lead them to desire more children (Wawire et al., 2013). Hence, this gives room for them to be pronatalist.

Husband/partner's desire was significantly associated with desires for an additional child for both groups. In the lower parity group, women whose husbands "want more", were less likely to desire an additional child than when "both want same". This is coterminous with the study by Ekane (2016), who found that women in Cameroon were less likely to desire to have another child when their partner desired more. In the higher parity group, women who do not have partners were less likely to desire an additional child than when both wanted same. Also, the category 'husband/partner wants fewer children' was significant among women in the two groups compared to when they both wanted same. This confirms the third

hypothesis. The literature suggests that, women were more likely to desire to have another child when their partner desired fewer (Conteh-Khali, 2014). One reason for this could be that knowing a husband's preference may not necessarily change a woman's desires but were we to measure actual fertility we may see that the husband's desire for fewer children would limit actual childbearing.

Last child's age was a significant variable associated with desire for an additional child among the two parous groups. Among women with a number of children below the wanted fertility rate, respondents whose most recent child was in the age group 5–9 were more likely to desire an additional child compared to those below age five. This is consistent with what Ekane (2016) found in a study conducted in Cameroon on education and fertility desires which states that the older the most recent child, the less likely it was that a woman would desire an additional child. Women with the number of children above the wanted fertility rate were less likely to desire an additional child in the two age categories compared to the reference category (< 5 years). This may be a result of women approaching the end of their reproductive capacities, thus regardless of the age of their most recent child; they are less likely to desire an additional child.

The age of a woman was also significantly associated with desire for an additional child among the two parity groups. Women in the two groups, who were aged 15–34 were more likely to desire an additional child compared to women in the 35+ age group. The literature suggests that the younger a woman is, the more likely she will desire an additional child. Seannot and Yeatman (2012) found that younger women had less of a desire to stop childbearing than older women. This may be as a result of younger women having more reproductive years ahead of them.

Some variables were significant for only the 1–3 parity group; they are husband's occupation and contraceptive use. With regards to husband's occupation, women with no partner were more likely to desire an additional child and this may be as a result of the prestige attached to childbearing. Women who use modern methods were less likely to desire an additional child. This corresponds with findings in the literature. According to Opoku (2014), couples who desire additional children may not use contraceptives. In the 4 + parity group; wealth quintile was the only variable that was significant for this group. Women who belonged to the poorer category were less likely to desire an additional child compared to those in the poorest households. Studies tends to suggest that there is both a positive and an inverse relationship between household wealth quintile and fertility desires (Colleran et al., 2015; Khan et al., 2014; Mekonnen & Worku, 2011; Orbeta, 2005; Sennott & Yeatman, 2012). This may be as a result of economic hardship, and the higher cost of childbirth and child rearing (Becker, 1960; Becker & Lewis, 1973) on one hand, and the idea of children being a source of wealth on the other hand (Bawah et al., 1999). Therefore, wealthier women may be more as well as less likely to desire another child than the poorest.

Based on findings from this study, we recommend that further studies are required to help understand the norms, customs, practices, and beliefs that govern the major Ghanaian ethnic groups regarding their fertility desires and behaviour. This is important for recognising and addressing any consequences due to high fertility in Ghana. Additionally, as health policies and programmes at all levels of Ghana's

health system seek to improve the reproductive health of adolescents, women, and men, they must be tailored for and with the various ethnic groups, considering their beliefs and practices that lead to their desires. Ghana's population policy sought to attain a set target of reducing the total fertility rate to 3 births per woman by 2020 (NPC, 1994). National population policies should bear in mind that family planning components hinge on ensuring people attain their desired fertility, thus it is important to target desires before providing services to limit births. Family planning counselling must include an awareness of cultural sensitivity as services and products are offered and made accessible to women and men, whether at community-based health planning and services (CHPS) facilities, health centres or hospitals.

Conclusion

The findings bring us a step closer to understanding the role ethnicity, an important socio-cultural factor, plays in influencing fertility desires among women in Ghana. The study has revealed, among other things, that specific ethnic groups in Ghana have higher fertility desires that need to be considered and possibly targeted with interventions to lower their desires. It reveals that even though conscious efforts are being made to control fertility in general, the results of their desires are understandable as it is these groups that have the highest fertility rates in the nation.

Fertility desires do differ by parity. The findings suggest that more than three-quarters of the women who have a number of children below the wanted fertility level, desire an additional child, whereas nearly one-quarter of women with a number of children above the wanted fertility rate had the same desires.

Finally, the findings show that overall, most control variables were significant for both groups of women; however, some were only significant for those with a higher parity. Socio cultural, demographic and husband related factors such as religion, age of a woman, child age, as well as husband's desires, explained a significant portion of the desires for additional children between the two parous groups of women.

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Data availability The 2014 Ghana Demographic and Health Survey data are available at dhsprogram.com.

Declarations

Conflict of interest The authors declare that they have no competing interests.

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