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Drivers of Unmet Need for Family Planning among Women of Advanced Reproductive Age in Urban Western Africa

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<http://dx.doi.org/10.5772/intechopen.72896>

Abstract

Studies have examined unmet need for family planning among urban women in a number of countries, but women of advanced reproductive age have not been explicitly examined. This chapter examined drivers of unmet need for family planning among urban women of advanced reproductive age in selected West African countries. Data were extracted from individual recode of the most recent Demographic and Health Survey (DHS) implemented in the selected countries. The study analysed weighted sample sizes of 800 women in Guinea, 4928 women in Nigeria and 1253 women in the Gambia. The outcome variable was unmet need for family planning. Key explanatory variables are sets of individual and community characteristics. Three multilevel logistic regression models were fitted using Stata 12. Results showed that among urban women of advanced reproductive age, unmet need for limiting was dominant. Results further revealed that individual and community characteristics significantly drive variations in unmet need for family planning in the studied countries. Urban interventions to reduce unmet need for family planning in West African countries should target women of advanced reproductive age.

Keywords: unmet need, contraceptive, advanced reproductive age, women, West Africa

1. Introduction

Family planning methods may be described as information and services that enable individuals and couples to control the spacing and timing of their pregnancies through effective natural or artificial methods of contraception [1]. The use of family planning methods, particularly modern methods, has both reproductive and non-reproductive health benefits for women,

families and communities. These include improved maternal and child health, prevention of sexually transmitted infections through adoption of safer sexual practices, reduction in prevalence of unintended pregnancies and unsafe abortion and improved economic growth [2–4]. However, evidence abounds worldwide about women who have desire to either space or limit their next pregnancies, but are not using any family planning method to actualise their pregnancy intention [5–9]. Such women have been described as having unmet need for family planning. The term ‘unmet need for family planning’ evolved in 1977 from ‘KAP-gap’ a term used in the 1960s to indicate the proportion of women in Family Planning Knowledge, Attitude and Practice (KAP) surveys who reported desire to limit childbearing but doing nothing to actualise their fertility desire [10, 11]. Though, the measurement of unmet need for family planning has undergone several refinements [12, 13], in its contemporary form, it measures the proportion of women who have desire to either delay the next pregnancy for at least the next 2 years or stop childbearing, but not using either traditional or modern method of contraception to achieve such intention [14–16]. These women have elevated the risk of unintended pregnancies and its associated consequences [17, 18]. Recent estimates of unmet need for family planning revealed that across the world, the prevalence of unmet need for family planning among women aged 15–49 years reduced from 15.4% in 1990 to 12.3% in 2010. However, the absolute number of women with unmet contraceptive need is not only expected to grow marginally, but also expected to increase in developing countries [19]. Hence, unmet need for family planning methods remains relatively high in some regions particularly sub-Saharan Africa, South Asia, Western Asia and the Caribbean [15, 20, 21]. This has made further investigation of the socio-demographic drivers of unmet need for family planning imperative in the regions. Several studies across developing countries have examined the determinants of unmet need for family planning [22–36]. These studies observed varying prevalence of unmet need for family planning in different countries, identified key determinants of unmet need for family planning (such as women’s education, decision-making autonomy, parity, access to mass media, partner desire for more children, spousal violence and place of residence), and also provided context relevant information for the development of appropriate interventions for reducing unmet need for family planning. A recent study [21] organised the identified determinants into multiple levels of influence such as determinants operating at the individual women level, partner or household level and health service level, indicating that the factors influencing the prevalence of unmet need for family planning operates at different levels of the social environment.

However, in spite of the numerous studies, multi-country studies focusing on urban West Africa are rarely available in literature. Though, a number of studies have focused on urban women in a number of countries [36–43], women of advanced reproductive age, that is women aged 35 years or older [44] in urban West Africa have not been explicitly examined. Five key reasons account for the need to focus on this group of women in West Africa. One, the sub-region has one of the highest levels of unmet need for family planning in the world [15]. Two, urban areas in West Africa not only drives development in the sub-region, but also the urban health in West Africa drives the health of both urban and non-urban dwellers as found in urban areas of most other developing regions [45–47]. Three, there are hardly specific interventions focusing on women of advanced reproductive age across the sub-region [48, 49]. Four, substantial proportions of women in advanced age group in West Africa are high parity women

[50] whose poor health condition may further be aggravated by an additional unintended pregnancy. Five, there are sufficient evidence worldwide that women of advanced reproductive age faces greater health risks occasioned by advanced maternal age pregnancy that results in adverse maternal, newborn and perinatal outcomes [51–54]. The objective of the chapter is thus to examine the drivers of unmet need for family planning among women of advanced reproductive age in urban areas of selected West African countries. The selected countries are Guinea, Nigeria and the Gambia. These countries are selected because they have the lowest proportions of married women using modern contraceptive in the sub-region [55]. Though, family planning programmes remain fragile in these countries, however, the three countries currently implement population and reproductive health policies and programmes that aim to improve men and women's quality of life through access to and use of effective methods of contraception [56–59]. The study is guided by the question: to what extent are individual and community factors important for explaining unmet need for family planning among women of advanced reproductive age in urban West Africa? The question was based on the finding that the factors influencing unmet need for family planning operates at different levels of the physical and social environment [21]. The socio-ecological theory provides the theoretical underpinning of the chapter. The theory asserts that human health behaviour and actions are influenced by multiple factors at different levels such as individual, household, community, society and policy environment [60].

2. Methodology

2.1. Data source and sample

Data analysed in the study were extracted from individual recode (women's data) of the most recent Demographic and Health Survey (DHS) implemented in the selected countries. The surveys provided reliable information about fertility, mortality, family planning, nutrition, child health and other basic demographic and health information in each country. The surveys in the Gambia and Nigeria were conducted in 2013, while the survey in Guinea was conducted in 2012. The surveys were conducted using similar design and methodology in line with DHS uniform survey methodology [61]. Samples in each country were drawn using multi-stage sampling techniques and were weighted by cluster. Detailed information about the survey designs have been published [62–64]. The surveys covered 9142, 10,233 and 38,948 women of reproductive age, respectively, in Guinea, the Gambia and Nigeria. However, not all the women were analysed in the study. All women less than 35 years and all rural women were excluded in the study. The study analysed weighted sample sizes of 800 women in Guinea, 4928 women in Nigeria and 1253 women in the Gambia.

2.2. Outcome variable

The outcome variable in the study was unmet need for family planning. This was measured adopting a recent revision of the measurement of unmet need for family planning [12]. The outcome variable naturally had three categories, namely, unmet need for limiting (criteria for

inclusion in this category included being not having desire for additional child, not currently pregnant, not postpartum amenorrheic, not considered fecund, but not using a method of contraception. Women who are currently pregnant with an unwanted pregnancy and postpartum amenorrheic women whose last births in the last 2 years were unwanted are also included in the category); no unmet need (criteria for inclusion in this category included being infecund or being fecund but desire to have a child in the next 2 years); and unmet need for spacing (criteria for inclusion in this category included being not pregnant, not postpartum amenorrheic, not considered fecund, desire to delay the next birth by two or more years but not using any contraception. Women who currently had a mistimed pregnancy or postpartum women whose last birth in the last 2 years were mistimed are also included in this category). However, at the multivariable analysis level, both unmet need for spacing and unmet need for limiting are grouped as unmet need, which is the category of interest in the chapter.

2.3. Explanatory and control variables

Two sets of explanatory variables are analysed in the study. The first sets are individual characteristics, namely, healthcare decision, gender norms that justify men's control over women, partner education, marital status, fertility desire, child death and age at first marriage. A number of previous studies have linked some of these variables to unmet need for family planning [30–32, 36, 65, 66]. Healthcare decision was based on who had final say on women's health care decision. Gender norm that justify men's control over women was based on women's response to whether wife battery was justify given some circumstances such as when wife goes out without husband permission, argues with husband, refuses to have sex with husband, burns food, and neglects children. Women who accepted at least one of the norms were grouped as 'norm accepted', while women who rejected all the norms were grouped as 'norm not accepted'. The second sets of variables are community characteristics, namely, community wealth level (proportion of women in the richer or richest wealth quintile in the community), community literacy level (proportion of women who can read and write complete sentence), proportion of women who have ever used contraceptive method in the community and community childcare burden (proportion of high parous women in the community). The community characteristics were derived from individual characteristics aggregated at the cluster level, and divided into low, medium and high categories. Three variables, namely, pregnancy termination, visitation by family planning worker and exposure to family planning mass media messages are selected for statistical control. These variables may impact need for either spacing or limiting pregnancies. While visitation by family planning worker and exposure to family planning media messages may enhance contraceptive use by providing reliable information about contraceptive choice, pregnancy termination experience may give insight into levels of exposures to unhealthy reproductive practices due to either non-use of contraceptive or contraceptive failure.

2.4. Data analyses

Statistical analyses were performed at three levels. One, frequency distribution, percentages and charts were used to described sample characteristics or prevalence of unmet need for family planning. Two, cross tabulations and unadjusted binary logistic regression coefficients were used to

examine association between the sets of explanatory variables and unmet need for family planning. The cross tabulations showed the prevalence of unmet need for family planning given the individual and community characteristics, while the unadjusted binary regression coefficients showed whether the association was positive or negative. Three, the multilevel mixed effect logistic regression was applied to examine the influence of the individual and community characteristics on unmet need for family planning. This analytical method was appropriate for the study because of the need to determine the extent of variation in unmet need for family planning that are attributable to each level of influence on the outcome variable. A multilevel mixed effect regression model has two components, namely, the fixed and random components [67]. The fixed effect was measured by the odds ratios of the binary logistic regression, while the random component was measured by the intra-class correlation (ICC) which measures the effects of the community characteristics. The ICC was calculated as: $\frac{\sigma_{ui}^2}{\sigma_{ui}^2 + [3.29]}$ with σ_{ui}^2 been the variance at the community level [68]. Three multilevel mixed effects regression models were fitted in the study using Stata 12. Model 1 was based on individual characteristics, while Model 2 included both the individual and community characteristics. Model 3 included all the explanatory and control variables. The goodness-of-fit of the multilevel models were examined using the Likelihood Ratio test. Statistical significance was set at 5%.

2.5. Ethical considerations

The data analysed were formally requested from MEASURE DHS. Authorisation to download and analyse the data sets were granted. The analyses and inferences drawn from the study are not linked to any individual, couple or communities.

3. Results

3.1. Sample characteristics and prevalence of unmet need for family planning

Figure 1 presents the prevalence of unmet need for family planning among the respondents. Unmet need for spacing was higher in the Gambia compared with Guinea and Nigeria, while unmet need for limiting was higher in Guinea compared with Nigeria and the Gambia. Overall, the prevalence of unmet need for family planning among urban women of advanced reproductive age was slightly more than one-fifth in Guinea (22.2%) and the Gambia (22.9%), but slightly more than one-tenth in Nigeria (12.6%). **Table 1** presents respondents' socio-demographic profile. In Guinea, women's healthcare decision was not only mostly taken by husband/others (68.4%), but also the proportion of joint decision with male partners was slightly less than one-fifth among respondents (19.8%). But in Nigeria and the Gambia, more than one-third of women's healthcare decisions were taken jointly with the male partner. However, decision by husband/others was dominant in Nigeria (48.9%), while joint decision was dominant in the Gambia (39.8%). Nearly all respondents in Nigeria and the Gambia did not accept gender norms that justify men's control over women. But in Guinea, one-third of the women (33.0%) accepted the norms. The majority of respondents' partners in Guinea and the Gambia had no formal education. But across the countries, while secondary education was the dominant educational level attained by respondents' partners, higher education was

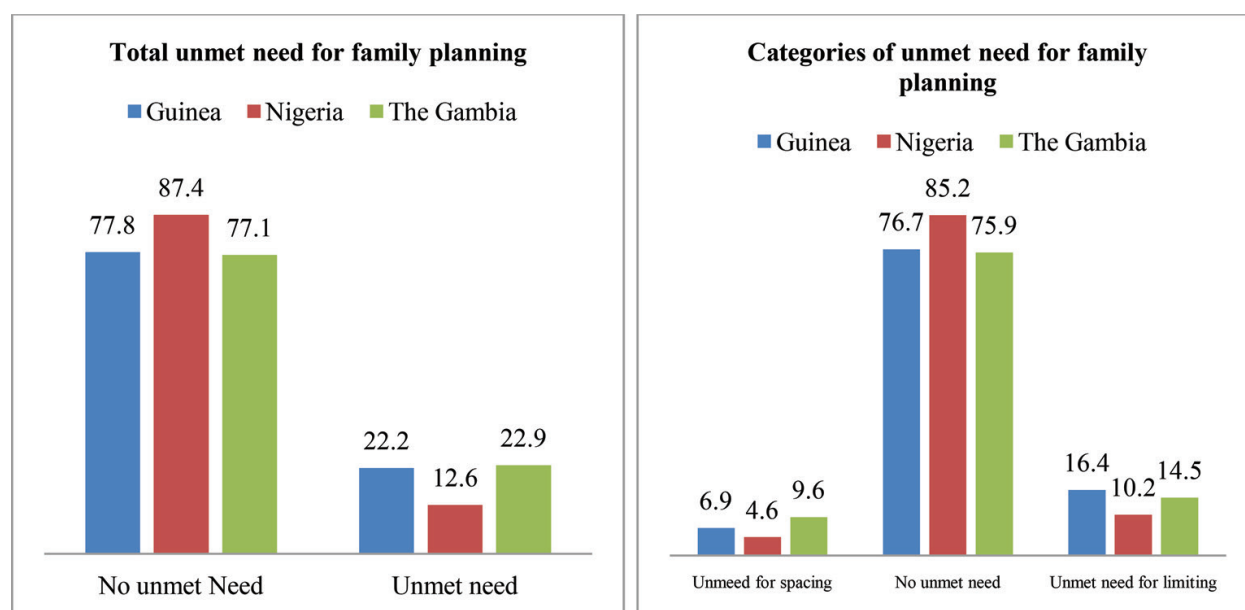


Figure 1. Unmet need for family planning in selected urban Western Africa.

the least attained among the respondent husbands. In Guinea, the majority of respondents' partners desired more children than the women, but in Nigeria, the majority of respondents had the same desired fertility with their husbands, though a substantial proportion of respondents' partners want more children than the respondents. On the contrary, the majority of respondents in the Gambia were unsure about their fertility desire. The majority of respondents in the studied countries were currently married.

More than one-third of respondents in Guinea and Nigeria had experienced child death, but in the Gambia, the proportion was slightly higher than a quarter (27.4%). In the studied countries, high proportion of respondents had no exposure to mass media family planning messages in the last 12 months preceding the surveys. In all the countries, the majority of respondents were not visited by a family planning worker within the last 12 months preceding the surveys. In Guinea, more than half of respondents were 17 years or less at the time of their first marriage (52.7%). In the Gambia, nearly half of respondents were married before the age of 18 years (48.9%). However, across the countries, more than one-third became married within the range of 18–24 years. The proportion of respondents who had ever had a pregnancy termination was similar in the three countries, though with slightly higher proportion in the Gambia. In Guinea and Nigeria, the majority of women lived in communities with high wealth level, but in the Gambia, the majority lived in communities with average wealth level. Likewise, in Guinea and Nigeria, the majority of respondents lived in communities with low literacy level; while in the Gambia, the majority lived in communities with moderate literacy level. In Nigeria, slightly more than one-third of respondents (36.5%) lived in communities with high proportion of women who had ever used a contraceptive method, but this was not observed in Guinea and the Gambia. In Guinea, nearly half of the women (49.5%) lived in communities with low childcare burden, but in Nigeria and the Gambia, more than one-third of respondents lived in communities with high childcare burden.

Characteristics	Country			Characteristics	Country		
	Guinea	Nigeria	The Gambia		Guinea	Nigeria	The Gambia
	Frequency (%)	Frequency (%)	Frequency (%)		Frequency (%)	Frequency (%)	Frequency (%)
Healthcare decision				Visitation by family planning worker			
Woman alone	95 (11.8)	560 (11.4)	366 (29.2)	Not visited	768 (96.0)	4226 (85.7)	1205 (96.2)
Jointly	158 (19.8)	1957 (39.7)	498 (39.8)	Visited	32 (4.0)	702 (14.3)	48 (3.8)
Husband/others	547 (68.4)	2411 (48.9)	389 (31.0)	Age at first marriage (years)			
Gender norms justifying men's control over women				17 or less	422 (52.7)	1960 (39.8)	613 (48.9)
Norm accepted	264 (33.0)	237 (4.8)	20 (1.6)	18-24	294 (36.8)	1975 (40.1)	494 (39.4)
Norm not accepted	536 (67.0)	4691 (95.2)	1233 (98.4)	25 or older	84 (10.5)	993 (20.1)	146 (11.7)
Partner education				Pregnancy termination			
None	418 (52.3)	1184 (24.0)	747 (59.6)	Never experienced	652 (81.5)	4004 (81.3)	983 (78.5)
Primary	78 (9.7)	1142 (23.2)	55 (4.4)	Ever experienced	148 (18.5)	924 (18.7)	270 (21.5)
Secondary	169 (21.2)	1518 (30.8)	291 (23.2)	Community wealth level*			
Higher	135 (16.8)	1084 (22.0)	160 (12.8)	Low	187 (23.4)	1541 (31.3)	433 (34.5)
Fertility desire				Medium	265 (33.2)	1614 (22.7)	585 (46.7)
Both want same	149 (18.6)	1686 (34.2)	210 (16.8)	High	348 (43.4)	1773 (36.0)	235 (18.0)
Husband want more	304 (38.0)	1490 (30.2)	382 (30.4)	Community literacy level**			
Husband want fewer	160 (20.0)	1020 (20.7)	225 (18.0)	Low	281 (35.2)	1721 (34.9)	447 (35.7)
Don't know	187 (23.4)	732 (14.9)	436 (34.8)	Medium	247 (30.8)	1643 (33.5)	558 (44.5)
Marital status				High	272 (34.0)	1564 (31.7)	248 (19.8)
Not currently married	115 (14.4)	698 (14.2)	180 (14.4)	Proportion ever used contraceptive in community***			
Currently married	685 (85.6)	4230 (85.8)	1073 (85.6)	Low	301 (37.6)	1810 (36.7)	474 (37.8)

Characteristics	Country			Characteristics	Country		
	Guinea	Nigeria	The Gambia		Guinea	Nigeria	The Gambia
	Frequency (%)	Frequency (%)	Frequency (%)		Frequency (%)	Frequency (%)	Frequency (%)
Child death				Medium	282 (35.2)	1319 (26.8)	514 (41.0)
Ever experienced	290 (36.2)	1802 (36.6)	343 (27.4)	High	217 (27.2)	1799 (36.5)	265 (21.0)
Never experienced	510 (63.8)	3126 (63.4)	910 (72.6)	Community childcare burden****			
Exposure to mass media family planning messages				Low	396 (49.5)	1858 (37.7)	390 (31.2)
No exposure	456 (57.0)	2105 (42.7)	619 (49.4)	Medium	191 (23.9)	1378 (28.0)	413 (32.9)
Radio	125 (15.6)	948 (19.2)	174 (13.9)	High	213 (26.6)	1692 (34.3)	450 (35.9)
Television	185 (23.2)	1231 (25.0)	400 (31.9)				
Newspaper	34 (4.2)	644 (13.1)	60 (4.8)				
Total (Sample Size)	800 (100.0)	4928 (100.0)	1253 (100.0)	Total (Sample Size)	800 (100.0)	4928 (100.0)	1253 (100.0)

Source: Author analysis based on Guinea Demographic and Health Survey 2012, Nigeria Demographic and Health Survey 2013 and the Gambia Demographic and Health Survey 2013.*Proportion of women in richer or richest wealth groups in community.

**Proportion of women who can read or write complete sentence in community.

***Proportion of women who had ever used a contraceptive method in community.

****Proportion of high parous women in community.

Table 1. Socio-demographic characteristics of respondents, Guinea, Nigeria and the Gambia.

3.2. Bivariable results

Table 2 presents the bivariate relationships between the research variables. Healthcare decision and unmet need for family planning were negatively associated in Guinea and Nigeria, but in the Gambia, a mixed association was observed. However, in the studied countries, women who did not participate in the decision had the lowest proportion of unmet need for family planning, while in Guinea and Nigeria, women who had sole participation in the decision had higher prevalence of unmet need for family planning. On the contrary, in the Gambia, women who jointly participated in the decision with their husbands had higher level of unmet need for family planning. In all the three countries, gender norms that justify men's control over women were negatively associated with unmet need for family planning. For instance, in the Gambia, the prevalence of unmet need for family planning was 22.5% among women who did not accept the norms compared with 45.6% prevalence among women who accepted the gender norms. The association between partners' education and unmet need for family planning were mixed in Guinea and Nigeria, but positive in the Gambia. In Guinea and Nigeria, the prevalence of unmet need for family planning decline as education improved from none to primary, and thereafter increased when education improved to secondary. However, at higher education, the prevalence reduced compared to the prevalence at secondary education. In the Gambia, the observed prevalence by variation in the educational level was inconsistent. Across the countries, marital status relates positively with unmet need for family planning, though the proportion of women who are not currently married was rather negligible in the sample which may have occasioned the observed association. Though, fertility desire had mixed relationship with unmet need for family planning across the countries, but in all the countries, while it was positively related with unmet need for family planning among women whose husbands wanted more children, it showed negative association with unmet need for family planning among women whose husbands wanted fewer children.

Child death and unmet need for family planning are negatively associated in the studied countries. In all the selected countries, women who had ever experienced death of a child had lower prevalence of unmet need for family planning. For instance, in Guinea, the prevalence of unmet need for family planning among women who had experienced child death was 21.0% compared with 24.3% among women who had ever experienced death of a child. Likewise, in the Gambia, while women who had ever experienced child death had a prevalence of 26.2% unmet need for family planning, women who had never experienced child death had a prevalence of 21.7% unmet need for family planning. In all the countries, age at first marriage and unmet need for family planning had mixed relationships. But while women whose first marriage occurred at 25 years or older years had lowest prevalence of unmet need in Guinea and Nigeria, there were no difference in the prevalence among women whose first marriage occurred at 18–24 years or older groups in the Gambia. Except in Nigeria, community wealth level and unmet need for family planning are negatively associated, but in all the countries, unmet need was lower in communities with high wealth level compared with women in communities with low wealth level. Except in the Gambia, community literacy level and unmet need for family planning are negatively associated with lower unmet need in communities with high literacy level compared with communities with low literacy level. Except in Nigeria, community childcare burden was negatively associated with unmet need

Characteristics	Guinea		Nigeria		The Gambia	
	% of unmet need	Coefficient	% of unmet need	Coefficient	% of unmet need	Coefficient
Healthcare decision						
Woman alone ^{ref}	40.3	—	16.5	—	24.5	—
Jointly	22.2	−0.865**	12.9	−0.288	29.0	0.232
Husband/others	19.0	−1.065**	11.5	−0.0425**	13.7	−0.716**
Gender norms justifying men's control over women						
Norm accepted ^{ref}	22.4	—	18.4	—	45.6	—
Norm not accepted	22.0	−0.021	12.3	−0.474**	22.5	−1.057
Partner education						
None ^{ref}	22.4	—	12.8	—	22.6	—
Primary	21.8	−0.032	12.4	−0.039	23.2	0.035
Secondary	29.2	0.360	13.4	0.053	23.9	0.075
Higher	12.9	−0.660**	11.5	−0.118	22.7	0.007
Marital status						
Not currently married ^{ref}	1.2	—	1.2	—	1.0	—
Currently married	25.7	3.319*	14.5	2.680*	26.6	3.567*
Fertility desire						
Both want same	17.5	—	13.5	—	20.2	—
Husband want more	26.4	0.524	14.2	0.062	24.4	0.240
Husband want fewer	9.2	−0.740	3.6	−1.413*	3.0	−2.110*
Do not know	30.1	0.706**	20.1	0.478**	33.2	0.675**
Child death						
Ever experienced ^{ref}	24.3	—	15.2	—	26.2	—
Never experienced	21.0	−0.191	11.1	−0.358*	21.7	−0.250
Age at first marriage (years)						
17 or less ^{ref}	22.1	—	13.2	—	23.4	—
18-24	24.3	0.119	14.2	0.084	21.7	−0.096
25 or older	15.1	−0.469	8.3	−0.526*	24.7	0.072
Community wealth level						
Low ^{ref}	24.9	—	13.8	—	26.2	—
Medium	20.4	−0.255	15.3	0.116	20.6	−0.311
High	22.0	−0.162	9.2	−0.466**	22.6	−0.197

Characteristics	Guinea		Nigeria		The Gambia	
	% of unmet need	Coefficient	% of unmet need	Coefficient	% of unmet need	Coefficient
Community literacy level						
Low ^{ref}	25.5	—	15.3	—	22.8	—
Medium	24.5	−0.055	13.4	−0.161	21.7	−0.065
High	16.7	−0.539**	8.9	−0.624*	25.7	0.158
Proportion ever used contraceptive in community						
Low ^{ref}	23.9	—	14.4	—	22.4	—
Medium	19.3	−0.276	13.2	−0.161	20.8	−0.097
High	23.5	−0.027	10.5	−0.624*	27.9	0.288
Community childcare burden						
Low ^{ref}	19.5	—	9.3	—	17.1	—
Medium	23.2	0.221	13.4	−0.099	25.6	0.513**
High	26.2	0.379	15.6	−0.364**	25.4	0.503**

Notes: ref. (reference category)

*p < 0.01

**p < 0.05.

Table 2. Association between individual/community characteristics and unmet need for family planning among urban women of advanced reproductive age.

for family planning. Across the countries, communities with low childcare burden had the lowest levels of unmet need compared with the prevalence in other communities. In Guinea and Nigeria, communities with low proportion of ever users of contraceptive method had higher prevalence of unmet need for family planning, while in the Gambia communities with high proportion of ever users had higher level of unmet contraceptive need.

3.3. Multivariable results

Table 3 presents the fixed effects of the multilevel logistic regression. In Model 1 which included only the individual characteristics, all the explanatory variables had varying significant effects on the likelihood of unmet need for family planning in Nigeria and the Gambia, but in Guinea, age at first marriage had no significant influence on unmet need for family planning. The inclusion of the community characteristics in Model 2 reduced the effect of some of the individual characteristics. In all the countries studied, health care decision and age at first marriage did not reveal significant effect on unmet need for family planning, while gender norms, education, marital status, fertility desire and child death were significant individual characteristics. However, in the Gambia, partner education did not significantly impact unmet need for family planning. All the four community characteristics

Characteristic predicting unmet need for family planning	Model 1			Model 2			Model 3		
	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Healthcare decision									
Woman alone ^{ref}	—	—	—	—	—	—	—	—	—
Jointly	0.620**	0.535**	1.098	0.707	0.971	1.078	0.714	0.962	1.027
Husband/others	0.345*	0.323*	0.910**	0.608	1.016	0.900	0.599	0.811	0.899
Gender norms justifying men's control over women									
Norm accepted ^{ref}	—	—	—	—	—	—	—	—	—
Norm not accepted	0.479**	0.616**	0.582**	0.942*	0.452**	0.569*	0.862**	0.698*	0.542**
Partner education									
None ^{ref}	—	—	—	—	—	—	—	—	—
Primary	0.626	0.687	1.091	0.568	0.874	1.245	0.597	0.868	1.247
Secondary	1.036	0.543**	1.262	1.052	1.219	1.259	1.007	1.193	1.280
Higher	0.486**	0.496**	0.831**	0.461**	1.185	1.272	0.421**	0.539*	0.590**
Marital status									
Not currently married ^{ref}	—	—	—	—	—	—	—	—	—
Currently married	3.066*	2.260**	2.416**	3.221*	2.149**	2.188*	3.041**	2.092*	2.308*
Fertility desire									
Both want same	—	—	—	—	—	—	—	—	—
Husband want more	1.412*	1.073	1.483	1.537	1.011	1.538*	1.836*	1.023	1.503
Husband want fewer	0.759*	0.596**	0.744**	0.888	0.619**	0.773*	0.467*	0.625**	0.755**
Do not know	1.804*	1.548**	2.304**	1.942**	1.543**	2.481*	1.792**	1.560**	2.542**

Characteristic predicting unmet need for family planning	Model 1			Model 2			Model 3		
	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Child death									
Ever experienced ^{ref}	—	—	—	—	—	—	—	—	—
Never experienced	0.968**	0.803**	0.707**	0.687*	0.844*	0.756*	0.861**	0.842**	0.732**
Age at first marriage (years)									
17 or less ^{ref}	—	—	—	—	—	—	—	—	—
18-24	1.089	1.008	0.938	1.091	1.072	0.931	1.062	1.063	0.905
25 or older	0.578	0.543*	0.752**	0.566	0.615	0.677	1.239**	0.605**	0.568**
Community wealth level									
Low ^{ref}				—	—	—	—	—	—
Medium				1.278	1.242	1.070	1.063	1.249	1.131
High				0.638*	0.956*	0.976*	0.348**	0.952*	0.609*
Community literacy level									
Low ^{ref}				—	—	—	—	—	—
Medium				1.067	1.116	0.898	1.319**	1.091	1.056
High				0.611**	0.892*	0.976*	0.681**	0.870*	0.922**
Proportion ever used contraceptive in community									
Low ^{ref}				—	—	—	—	—	—
Medium				0.923	1.041	1.058	0.988	1.023	1.092
High				1.248**	0.809*	1.156**	1.300	0.791	1.213
Community childcare burden									
Low ^{ref}				—	—	—	—	—	—

Characteristic predicting unmet need for family planning	Model 1			Model 2			Model 3		
	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia	Guinea	Nigeria	The Gambia
	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Medium				1.144	1.081	2.079**	1.181	1.088	2.086**
High				1.854*	1.463**	1.881**	1.870**	1.472**	1.843**
Pregnancy termination									
Never experienced ^{ref}							—	—	—
Ever experienced							0.583	1.034	0.904
Visitation by family planning worker									
Not visited ^{ref}							—	—	—
Visited							2.044	1.065	0.908
Exposure to mass media family planning messages									
No exposure							—	—	—
Radio							1.365	1.039	1.546
Television							1.079	1.604	1.351
Newspaper							0.840**	0.989*	0.755**
Notes: ref. (reference category)									
*p < 0.01									
**p < 0.05.									

Table 3. Odds ratios showing fixed effects of multilevel logistic regression.

analysed showed significant effects on the likelihood of unmet need for family planning across the studied countries. For instance, in all the countries, the likelihood of unmet need for family planning reduced significantly in communities with high wealth level compared with communities with low wealth level. Likewise, the likelihood of unmet need for family planning reduced significantly in communities with high literacy level compared with communities with low literacy level. Also, the likelihood of unmet need for family planning increased significantly in communities with high childcare burden compared with communities with low childcare burden. In the full model (Model 3), healthcare decision was the only individual characteristic with no significant effect on the odds of unmet need for family planning. Across the countries, women who did not accept gender norms that justified men's control over women, were 13.8, 30.2 and 45.8% less likely to have unmet contraceptive need, respectively, in Guinea, Nigeria and the Gambia. Partner education revealed a significant effect only when educational level reaches higher education. For instance, in Guinea, women whose partner attained higher education were 57.9% less likely to have unmet contraceptive need (OR = 0.421; $p < 0.05$). Also in the Gambia, women whose partner attained higher education were 41.0% less likely to have unmet contraceptive need (OR = 0.590; $p < 0.05$). In all the countries, currently married women were more likely to have unmet contraceptive need, though this may relate more with the dominance of currently married women in all the studied countries.

Though, with a slight variation in Guinea, fertility desire significantly affected the likelihood of unmet need for family planning. But in all the selected countries, the likelihood of unmet need for family planning reduces among women whose husbands wanted fewer children compared with other women. For instance, in Nigeria, women whose husbands wanted fewer children were 37.5% less likely to have unmet contraceptive need compared with women in the reference category (OR = 0.625; $p < 0.05$). In all the countries, women who had never experienced child death were less likely to have unmet contraceptive need. Age at first marriage had mixed effects across the countries. In Guinea, women who were 25 years or older at their first marriage were 23.9% more likely to have unmet contraceptive need (OR = 1.239; $p < 0.05$), but in Nigeria and the Gambia, this group of women were less likely to have unmet contraceptive need. Three of the community characteristics had significant effect on the likelihood of unmet need for family planning. In the three countries, women in communities with high wealth level had less likelihood of unmet need for family planning. For instance, in Guinea, women in communities with high wealth level were 65.2% less likely to have unmet contraceptive need (OR = 0.348; $p < 0.05$). Likewise, in the Gambia, women in communities with high wealth level were 39.1% less likely to have unmet contraceptive need (OR = 0.609; $p < 0.01$). Women in communities with high literacy level were also less likely to have unmet contraceptive need in all the countries studied. For instance, in Nigeria, women in communities with high literacy level were 13.0% less likely to have unmet contraceptive need compared with women in communities with low literacy level (OR = 0.870; $p < 0.01$). Across the countries, women in communities with high childcare burden had higher likelihood of unmet contraceptive need. For instance, in Guinea (OR = 1.870; $p < 0.05$) and the Gambia (OR = 1.843; $p < 0.05$), women in communities with high childcare burden were nearly twice more likely to have unmet need for family planning compared with women in communities with low childcare

Parameter	Guinea				Nigeria				The Gambia			
	Empty model	Model 1	Model 2	Model 3	Empty model	Model 1	Model 2	Model 3	Empty model	Model 1	Model 2	Model 3
Community-level variance (Standard Error)	2.661 (0.312)	2.225 (0.307)	2.008 (0.276)	1.943 (0.250)	3.611 (0.501)	1.862 (0.243)	1.705 (0.239)	1.592 (0.206)	2.066 (0.343)	1.885 (0.299)	1.664 (0.244)	1.522 (0.209)
Log-likelihood	-3028	-2963	-2932	-2908	-4231	-4118	-3794	-3658	-2543	-2117	-2008	-1938.7
LR test (χ^2)	932.1*	530.7*	441.3*	372.5*	1624.2*	798.8*	570.8*	318.7*	432.1*	347.6*	319.6*	216.3*
ICC	0.447 (44.7%)	0.403 (44.3%)	0.379 (37.9%)	0.371 (37.1%)	0.523 (52.3%)	0.361 (36.1%)	0.341 (34.1%)	0.326 (32.6%)	0.386 (38.6%)	0.364 (36.4%)	0.336 (33.6%)	0.316 (31.6%)

Note: *p < 0.001.

Table 4. Multilevel logistic regression showing random effects on unmet need for family planning.

burden. Exposure to family planning messages was the only control variable that significantly influences unmet need for family planning with results showing that only exposure through newspaper reduces the likelihood of unmet contraceptive need in the studied countries.

The results of the random effects on unmet contraceptive need are presented in **Table 4**. The goodness-of-fit of the multilevel models were examined by the LR test which showed statistical significance across the countries. The consistent reduction in the values of the log likelihood across the countries also indicated that the fitted models are adequate. The ICC values suggest that the analysed community characteristics had significant effect on the likelihood of unmet need for family planning in the studied countries. When no individual and community characteristics were included in the empty model, the greatest variation in unmet need for family planning was observed in Nigeria (ICC = 0.523). With the inclusion of the individual characteristics in Model 1, the highest variation in unmet need for family planning attributable to community characteristics was observed in Guinea (ICC = 0.403). Also, the full model showed that the highest variation in unmet need for family planning attributable to the community characteristics were observed in Guinea (ICC = 0.371). Overall, the ICC indicated that most women of advanced reproductive age in the urban communities examined have similar unmet contraceptive need.

4. Discussion

This chapter examined the drivers of unmet need for family planning among urban women of advanced reproductive age in selected West African countries. With sufficient empirical evidence that women of advanced reproductive age not only have elevated risks of adverse maternal and child health outcome if they become pregnant [51–54], but also higher risk of unintended pregnancies and its associated consequences [17, 18], this chapter by further revealing levels of unmet contraceptive need among the women provided additional information on the need to focus attention on the reproductive behaviour of women of advanced reproductive age. The chapter by examining unmet need for family planning in a multi-country setting improves upon previous studies that have focused urban women in specific countries [36–43]. The high quality of data analysed in the chapter is not in doubt and provides reliable international comparability of the levels and correlates of unmet need for family planning within the West African region. Findings in the chapter provided more support for the socio-ecological theory [60] by revealing that unmet need for family planning was influenced by factors operating at both the individual and community levels of urban societies. This finding also provided support for the hierarchy of influence on unmet need for family planning identified in a recent study [21]. A number of the findings may impact policy and programmes.

One, unmet need for family planning was relatively higher in urban Guinea and the Gambia compared with urban Nigeria. Levels of unmet need for family planning as found in Guinea (22.2%) and the Gambia (22.9%) though lower than the 41.5% found in one study [28] but were far higher than the recent global estimate of 12.3% [19], and much higher than prevalence reported in some previous studies [18, 27, 30, 33]. Though this study focused only women of advanced reproductive age and not all women of childbearing as analysed in most of the existing studies, the observed level nonetheless suggests that the prevalence of unmet

need for family planning in the studied countries particularly Guinea and the Gambia may require more urgent attention to accelerate pace of reduction in the countries. Bearing in mind that most women of advanced reproductive age in West Africa are high parous women [48, 50], it is important to devise specific programmes to target women in advanced age group by providing expanded counselling and services that addresses their peculiar contraceptive concerns. Such programmes should extensively use the mass media, particularly newspapers, to provide needed information. Two, the study found that gender norms affected the level of unmet need for family planning in all the countries. In virtually all West African countries, men still play dominant roles in women's reproductive health despite increasing attention on gender equity and the implementation of several women-focused social programmes across the region. The key challenge, however, has remained how to effectively alter the balance of power between men and women within households and communities. In this regard, behaviour change communication (BCC) programmes have been developed in all the studied countries [59]. While it is important to sustain the BCC programmes, it is also necessary to scale up the promotion of men's method in West Africa since research has provided sufficient evidence that many men will use modern methods of contraception if they have appropriate information and counselling [65, 66]. This may likely reduce the extent of unmet contraceptive need by reducing the risk of unintended pregnancy and fertility among women.

Three, men's desire for fewer children reduces likelihood of unmet contraceptive need in urban West Africa. In many parts of the world, surveys have shown that men often desire more children than women [65, 66]. This further buttress continued need for male involvement in women's reproductive health particularly in the use of contraceptive. It is not likely that unmet contraceptive need among women in West Africa will substantially reduce without change in men's desire for more children. Governments and family planning providers in West Africa have onerous responsibility of helping more men not only to support or approve partners use of modern contraceptives, but also for men to take the lead in use of modern contraceptives. This may be achieved by developing family planning programmes that presents use of contraceptives as one of men's key responsibility to their partners. In addition, such programmes could provide information detailing how traditional gender roles can adversely affect women's sexual and reproductive health. Four, child death experience impact unmet contraceptive need among urban women of advanced reproductive age in West Africa. In virtually every part of West Africa, children have strong cultural relevance. Births are highly celebrated, and childlessness is not accepted in most communities. Hence, the event of death of a child is viewed as a serious tragedy for individuals, couples and communities. In the event of a child death, women are mostly encouraged to have replacement except such women have been declared infecund. Such practice often elevates the risk of many women of advanced reproductive age. However, this practice and its associated risk could be addressed by taken more actions to ensure child survival in West Africa. Five, community contexts have effects on the extent of unmet contraceptive need among urban women of advanced reproductive age. In several communities, women usually have similar perception and attitude towards issues of childbearing. In many instances, women tend to compare experiences and reacts in like manners. This provides basis for more community-based family planning programmes across West Africa. However, it is important to consider developing specific community-based programmes for urban women of advanced reproductive age.

5. Conclusion

This chapter examined drivers of unmet need for family planning among urban women of advanced reproductive age. Though, the chapter analysed a cross-sectional data which usually limits a cause-effect relationship between variables, nonetheless, the analyses provided sufficient empirical associations between the research variables. Individual and community factors are important for explaining variations in unmet contraceptive need among urban women of advanced reproductive age. The key drivers are gender norms that justify men's control over women, partner education, fertility desire, child mortality, age at first marriage, community literacy level, community wealth level, community childcare burden and exposure to mass media family planning messages. The development of interventions to specifically target women of advanced reproductive age is imperative in urban West Africa.

Acknowledgements

The author expresses appreciation to MEASURE DHS for granting request to download and analyse the data sets.

Conflict of interest

The author declares no conflict of interest.

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References

- [1] Haupt A, Kane TT. Population Reference Bureau's Population Handbook. 4th International Edition. Washington, DC: Population Reference Bureau; 1998
- [2] Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: An analysis of 172 countries. *Lancet*. 2012;**380**:111-125. DOI: 10.1016/S0140-6736(12)60478-4
- [3] Canning D, Schultz TP. The economic consequences of reproductive health and family planning. *Lancet*. 2012;**380**:165-171. DOI: 10.1016/S0140-6736(12)60827-7

- [4] Cleland J, Conde-Agudelo A, Peterson H, Ross J, Tsui A. Contraception and health. *Lancet*. 2012;**380**:149-156. DOI: 10.1016/S0140-6736(12)60609-6
- [5] Bongaarts J, Bruce J. The causes of unmet need for contraception and the social content of services. *Studies in Family Planning*. 1995;**26**(2):57-75
- [6] Casterline JB, El-Zanaty F, El-Zeini OL. Unmet need and unintended fertility: Longitudinal evidence from upper Egypt. *International Family Planning Perspectives*. 2003;**29**(4):158-166
- [7] Bankole A, Sedgh G, Okonofua F, Imarhiagbe C, Hussain R, Wulf D. *Barriers to Safe Motherhood in Nigeria*. Guttmacher Institute: New York; 2009
- [8] Machiyama K, Cleland J. *Insights into Unmet Need in Ghana*. STEP UP Research Report. London: London School of Hygiene & Tropical Medicine; 2013
- [9] Staveteig S. *Understanding Unmet Need in Ghana: Results from a Follow-Up Study to the 2014 Ghana Demographic and Health Survey*. DHS Qualitative Research Studies No. 20. ICF International: Rockville, Maryland, USA; 2016
- [10] Stokes B. *Filling Family Planning Gaps*. Population Reports. Series J, No. 20. Baltimore: Johns Hopkins School of Health, Population Information Program; 1978
- [11] Casterline JB, Sinding SW. Unmet need for family planning in developing countries and implications for population policy. *Population and Development Review*. 2000;**26**(4):691-723
- [12] Bradley SEK, Croft TN, Fishel FD, Westoff CF. *Revising Unmet Need for Family Planning*. DHS Analytical Studies No. 25. ICF International: Calverton, Maryland, USA; 2012
- [13] Bradley SEK, Casterline JB. *Understanding unmet need: History, theory, and measurement*. *Studies in Family Planning*. 2014;**45**(2):123-150. DOI: 10.1111/j.1728-4465.2014.00381.x
- [14] Westoff CF. *Unmet Need for Modern Contraceptive Methods*. DHS Analytical Studies No. 28. ICF International: Calverton, Maryland, USA; 2012
- [15] Cleland J, Harbison S, Shah IH. Unmet need for contraception: Issues and challenges. *Studies in Family Planning*. 2014;**45**(2):105-122
- [16] Sedgh G, Hussain R. Reasons for contraceptive nonuse among women having unmet need for contraception in developing countries. *Studies in Family Planning*. 2014;**45**(2):151-169
- [17] Speizer IS, Lance P. Fertility desires, family planning use and pregnancy experience: Longitudinal examination of urban areas in three African countries. *BMC Pregnancy and Childbirth*. 2015;**15**:294. DOI: 10.1186/s12884-015-0729-3
- [18] Bishwajit G, Shangfeng T, Yaya S, Feng Z. Unmet need for contraception and its association with unintended pregnancy in Bangladesh. *BMC Pregnancy and Childbirth*. 2017;**17**:186. DOI: 10.1186/s12884-017-1379-4
- [19] Alkema L, Kontorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: A systematic and comprehensive analysis. *Lancet*. 2013;**381**:1642-1652. DOI: 10.1016/S0140-6736(12)62204-1

- [20] Darroch JE, Singh S. Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: An analysis of national surveys. *Lancet*. 2013;**381**:1756-1762
- [21] Wulifan JK, Brenner S, Jahn A, De Allegri M. A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle income countries. *BMC Women's Health*. 2016;**16**:2. DOI: 10.1186/s12905-015-0281-3
- [22] Mawajdeh S. Demographic profile and predictors of unmet need for family planning among Jordanian women. *The Journal of Family Planning and Reproductive Health Care*. 2007;**33**(1):53-56
- [23] Ogunjuyigbe PO, Akinlo A, Oni GO. Violence against women as a factor in unmet need for contraception in Southwest Nigeria. *Journal of Family Violence*. 2010;**25**:123-130. DOI: 10.1007/s10896-009-9275-y
- [24] Withers M, Kano M, Pinatih GNI. Desire for more children, contraceptive use and unmet need for family planning in a remote area of Bali, Indonesia. *Journal of Biosocial Science*. 2010;**42**:549-652. DOI: 10.1017/S0021932010000052
- [25] Mekonnen W, Worku A. Determinants of low family planning use and high unmet need in Butajira District, south Central Ethiopia. *Reproductive Health*. 2011;**8**:37, <http://www.reproductive-health-journal.com/content/8/1/37>
- [26] Ali AAA, Okud A. Factors affecting unmet need for family planning in eastern Sudan. *BMC Public Health*. 2013;**13**:102, <http://www.biomedcentral.com/1471-2458/13/102>
- [27] Motlaq ME, Eslami M, Yazdanpanah M, Nakhaee N. Contraceptive use and unmet need for family planning in Iran. *International Journal of Gynecology & Obstetrics*. 2013;**121**:157-161. DOI: 10.1016/j.ijgo.2012.11.024
- [28] Shifa GT, Kondale M. High unmet need for family planning and factors contributing to it in southern Ethiopia: A community based cross-sectional study. *Global Journal of Medical Research: K Interdisciplinary*. 2014;**14**(4):21-32
- [29] Kelodjove S. Trends and determinants of unmet need for family planning in Cameroon: The role of socio-cultural context. *Sociology Study*. 2015;**5**(1):39-52. DOI: 10.17265/2159-5526/2015.01.005
- [30] Nazir S, Mittal A, Anand BK, Goel RKD, Singh J, Rashid A. Determinants of unmet need for family planning in a developing country: An observational cross sectional study. *National Journal of Community Medicine*. 2015;**6**(1):86-91
- [31] Austin A. Unmet contraceptive need among married Nigerian women: An examination of trends and drivers. *Contraception*. 2015;**91**:31-38. DOI: 10.1016/j.contraception.2014.10.002
- [32] Alaba OO, Olaomi JO, Olubusoye OE. Spatial pattern and determinants of unmet need of family planning in Nigeria. *South African Family Practice*. 2015;**57**(5):306-312. DOI: 10.1080/20786190.2015.1071536

- [33] Genet E, Abeje G, Ejigu T. Determinants of unmet need for family planning among currently married women in Dangila town administration, Awi zone, Amhara regional state; a cross-sectional study. *Reproductive Health*. 2015;**12**:42. DOI: 10.1186/s12978-015-0038-3
- [34] Ayanore MA, Pavlova M, Groot W. Unmet reproductive health needs among women in some west African countries: A systematic review of outcome measures and determinants. *Reproductive Health*. 2016;**13**:5. DOI: 10.1186/s12978-015-0104-x
- [35] Machiyama K, Caterline JB, Mumah JC, Huda FA, Obare F, Odwe G, et al. Reasons for unmet need for family planning, with attention to the measurement of fertility preferences: Protocol for a multi-site cohort study. *Reproductive*. 2017;**14**:23. DOI: 10.1186/s12978-016-0268-z
- [36] Wang W, Staveteig S, Winter R, Allen C. Women's Marital Status, Contraceptive Use, and Unmet Need in Sub-Saharan Africa, Latin America, and the Caribbean. DHS Comparative Reports No. 44. Rockville, Maryland, USA: ICF; 2017
- [37] Ibisomi L, Fotso J-C, Mutua M. Unmet Need for Contraception among Women in Urban Nigeria. Uganda: Presented Planning Conference; 2009
- [38] Ezeh AC, Kodzi I, Emina J. Reaching the urban poor with family planning services. *Studies in Family Planning*. 2010;**41**(2):109-116
- [39] Speizer IS, Nanda P, Achyut P, Pillai G, Guilkey DK. Family planning use among urban poor women from six cities of Uttar Pradesh, India. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2012;**89**(4). DOI: 10.1007/s11524-011-9667-1
- [40] Speizer IS, Calhoun LM, Hoke T, Sengupta R. Measurement of unmet need for family planning: Longitudinal analysis of the impact of fertility desires on subsequent child-bearing behaviors among urban women from Uttar Pradesh, India. *Contraception*. 2013;**88**:553-560. DOI: 10.1016/j.contraception.2013.04.006
- [41] Bhattathity MM, Ethirajan N. Unmet need for family planning among married women of reproductive age group in urban Tamil Nadu. *Journal of Family and Community Medicine*. 2014;**21**(1):53-57. DOI: 10.4103/2230-8229.128786
- [42] Sulthana B, Shewade HD, Sunderamurthy B, Manoharan K, Subramanian M. Unmet need for contraception among married women in an urban area of Puducherry, India. *The Indian Journal of Medical Research*. 2015;**141**:115-118
- [43] Ajong AB, Njotang PN, Yakum MN, Essi MJ, Essiben F, Eko FE, et al. Determinants of unmet need for family planning among women in urban Cameroon: A cross sectional survey in the Biyem-Assi Health District, Yaoundé. *BMC Women's Health*. 2016;**16**:4. DOI: 10.1186/s12905-016-0283-9
- [44] Solanke BL. Advanced reproductive age and childbearing choices in Nigeria. *Health Care for Women International*. 2017. DOI: 10.1080/07399332.2017.1297449
- [45] Galea S, Freudenberg N, Vlahov D. Cities and population health. *Social Science & Medicine*. 2005;**60**:1017-1033. DOI: 10.1016/j.socscimed.2004.06.036

- [46] Harpham T. Urban health in developing countries: What do we know and where do we go? *Health & Place*. 2009;**15**:107-116. DOI: 10.1016/j.healthplace.2008.03.004
- [47] Friel S, Akerman M, Hancock T, Kumaresan J, Marmot M, Melin T, et al. Addressing the social and environmental determinants of urban health equity: Evidence for action and a research agenda. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2011;**88**(5):860-874. DOI: 10.1007/s11524-011-9606-1
- [48] The Health Communication Capacity Collaborative HC3. Engaging Families for Healthy Pregnancies - A Focused Desk Review of Knowledge, Attitudes and Behaviors Related to Pregnancies in Three High-Risk Situations: Advanced Maternal Age; High Parity; and Rapid Repeat Pregnancies After Abortion or Miscarriage. Baltimore: Johns Hopkins Bloomberg School of Public Health Center for Communication Programs; 2014
- [49] OlaOlorun FM, Hindin MJ. Having a say matters: Influence of decision-making power on contraceptive use among Nigerian women ages 35-49 years. *PLoS One*. 2014;**9**(6):e98702. DOI: 10.1371/journal.pone.0098702
- [50] Health Communication Capacity Collaborative. Qualitative Research on Advanced Maternal Age and High Parity Pregnancies in West Africa. Baltimore, USA: Health Communication Capacity Collaborative Johns Hopkins Center for Communication Programs; 2016
- [51] Yogev Y, Melamed N, Tenenbaum-Gavish K, Ben-Shitrit G, Ben-Haroush A. Pregnancy outcome at extremely advanced maternal age. *American Journal of Obstetrics and Gynecology*. 2010;**203**(558):e1-e7. DOI: 10.1016/j.ajog.2010.07.039
- [52] Corolan M, Frankowska D. Advanced maternal age and adverse perinatal outcome: A review of the evidence. *Midwifery*. 2011;**27**:793-801
- [53] Kenny LC, Lavender T, McNamee R, O'Neill SM, Mills T, Khashan AS. Advanced maternal age and adverse pregnancy outcome: Evidence from a large contemporary cohort. *PLoS One*. 2013;**8**(2):e56583. DOI: 10.1371/journal.pone.0056583
- [54] Karabulut A, Ozkan S, Bozkurt AI, Karahan T, Kayan S. Perinatal outcomes and risk factors in adolescent and advanced age pregnancies: Comparison with normal reproductive age women. *Journal of Obstetrics and Gynaecology*; **33**(4):346-350. DOI: 10.3109/01443615.2013.767786
- [55] Population Reference Bureau. World Population Data Sheet with a Special Focus on Human Needs and Sustainable Resources. Washington, DC: PRB; 2016
- [56] Delamou A, Koivogui A, Dobourg D, Delvaux T. Family planning in Guinea: The need for better public commitment. *Tropical Medicine and International Health*. 2014;**19**(1):65-73. DOI: 10.1111/tmi.12219
- [57] Sundby JA. Rollercoaster of policy shifts: Global trends and reproductive health policy in the Gambia. *Global Public Health*. 2014;**9**(8):894-909. DOI: 10.1080/17441692.2014.940991Sundby

- [58] Jammeh SSS, Liu C-Y, Cheng S-F, Lee-Hsieh. Community-based on married couples' family planning knowledge, attitude and practice in rural and urban Gambia. *African Health Sciences*. 2014;**14**(2):273-280. DOI: 10.4314/ahs.v14i2.1
- [59] Krenn S, Cobb L, Babalola S, Odeku M, Kusemijub B. Using behavior change communication to lead a comprehensive family planning program: The Nigerian urban reproductive health initiative. *Global Health: Science and Practice*. 2014;**2**(4):427-443. DOI: 10.9745/GHSP-D-14-00009
- [60] McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Education Quarterly*. 1988;**15**:351-377
- [61] ICF International. Survey Organization Manual for Demographic and Health Surveys. MEASURE DHS. ICF International: Calverton Maryland, USA; 2012
- [62] Institute National de la Statistique, Measure DHS, ICF International. Guinea Demographic and Health Survey 2012. Calverton, Maryland, USA; 2013
- [63] National Population Commission (NPC) [Nigeria], ICF International. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International. p. 2014
- [64] The Gambia Bureau of Statistics (GBOS), ICF International. The Gambia Demographic and Health Survey 2013. Banjul, The Gambia, and Rockville, Maryland, USA: GBOS and ICF International. p. 2014
- [65] Drennan M. Reproductive Health: New Perspectives on Men's Participation. *Population Reports. Series J, No. 46*. Baltimore, John Hopkins University School of Public Health, Population Information Program; 1998
- [66] Salem R. Men's Surveys: New Findings. *Population Reports. Series M, No. 18*. Baltimore, John Hopkins Bloomberg School of Public Health, The INFO Project; 2004
- [67] StataCorp. Stata: Release 12: Statistical Software. College Station, TX: StataCorp LP; 2011
- [68] Merlo J, Wagner P, Ghith N, Leckie G. An original stepwise multilevel logistic regression analysis of discriminatory accuracy: The case of Neighborhoods and health. *PLoS One*. 2016;**11**(4):e0153778. DOI: 10.1371/journal.pone.0153778