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Research Article

Pooled prevalence and contextual determinants of contraceptive utilization among reproductive-age women in The Gambia: Evidence from 2013 – 2020 Demographic Health Surveys

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Abstract: Background: Family planning (FP) methods have been found as an efficient approach of reducing fertility and are therefore widely supported in order to decrease population growth, particularly in poor nations. Promoting contraception availability among women (15 – 49) age has also been shown to be an efficient public health strategy for improving maternal and newborn health outcomes. This paper aimed at exploring the pooled prevalence of contraceptive uptake and its contextual determinants among women of childbearing age in The Gambia. **Methods:** The Gambia Demographic and Health Survey (GDHS) in both 2013 and 2019-20 was used for this study. Data were obtained from a pooled 22,098 women aged 15-49 (10,233 for 2013 and 11,865 for 2019-20) through a stratified two-stage cluster sampling approach. Percentages and chi-square tests were used and variables with p-value <0.05 were included into the model. A multivariable logistic regression model was used to assess the predictors of contraceptive usage at 95% confidence interval (CIs) with computed adjusted odds ratios (aORs). All the study data were analyzed using Stata version 15. **Results:** The weighted pooled prevalence of modern contraceptive utilization in The Gambia was 10.1%. Younger age, compared with women aged 25-29; 30-34; 35-39; 40-44; primary education (aOR=1.25, 95% CI=1.05-1.49); secondary education (aOR=1.57, 95% CI= 1.32-1.85); Higher education (aOR=1.90, 95% CI=1.34-12.69); living in urban areas (aOR=1.49, 95% CI= 1.25-1.79); parity 2-4 (aOR=1.21, 95% CI= 1.01-1.47); told about FP at health facility (aOR=2.97, 95% CI= 2.61-3.38), and no desire for many children (aOR=1.96, 95% CI= 1.62-2.37) were more like to use modern contraceptives among Gambian women. **Conclusion:** The programme certainly needs to consider improvements in the quality of care being offered to acceptors. Government agencies should target these programs and campaigns on regional FP demands and provide suitable culturally sensitive and regionally adaptive services to the communities' contexts. The programme should intensify its efforts in rural and urban settings to improve accessibility to and availability of FP services.

Keywords: Contraceptives, Gambia, Family planning, Reproductive-age women

1. Introduction

Family planning (FP) methods have been found as an efficient approach to reducing fertility and are therefore widely supported to decrease population growth, particularly in poor nations [1]. Promoting contraception availability among women of reproductive age has also been shown to be an effective public health strategy for improving maternal

and newborn health outcomes [2]. Numerous studies demonstrate that increasing contraceptive use directly reduces maternal deaths by decreasing unexpected pregnancies, adolescent pregnancies, unsafe abortions, and high-risk pregnancies, as well as allowing for pregnancies to be spaced out [1-3]. The risks of morbidity and mortality associated with unsafe abortions are significant for women of all ages in most underdeveloped countries [4]. By preventing unplanned pregnancies, FP has numerous health benefits [5-7]. These benefits include decreased human immunodeficiency virus (HIV) transmission to newborns [8], decreased maternal mortality and morbidity [9], decreased neonatal, infant, and child mortality [10, 11], more significant employment and educational options for women (and men) who can postpone childbearing, and decreasing reliance on often dangerous abortion [9]. Certain contraceptives, such as condom use, have been hailed for their role in reducing sexually transmitted infections (STIs), including HIV/AIDS [1].

There are approximately 1.9 billion women of childbearing age (15-49 years) on the planet in 2019 [12]. 1.1 billion people worldwide require FP; 842 million of these utilize contraception now, whereas unmet contraceptive needs affect 270 million people [12, 13]. Globally, the current estimated amount of FP required to meet Sustainable Development Goal (SDG) indicator 3.7.1 was 75.7% in 2019 [12]. FP services are also critical to reaching SDG number five, which calls for gender equality as well as women and girl empowerment [12]. Nonetheless, fewer than half of the demand for FP in Africa's middle belt was supplied [12]. This demonstrates their inability to make the essential choices to avoid and prevent undesired pregnancies [14]. Unintended pregnancy is one of the outcomes of this unfulfilled demand [15]. In general, 39 per 1000 women aged 15-49 receive induced abortion out of the 73.3 million abortions performed each year [16]. Around three in ten pregnancies and six in ten unwanted pregnancies resulted in an induced abortion, whereas more than seven in ten are considered unsafe and happened in Africa [16]. As a result, Africa has the highest risk of dying from unsafe abortion [4].

Recently, The Gambia's National Indicators for FP satisfaction with modern contraception were 37.6% in 2017 [17] and 43.9% in 2019 [18], with rural areas reporting 40.3% satisfaction with FP and a cumulative marginal difference of 5.2% lower than urban areas [18]. At the Local Government Area (LGA) level, Basse (22.5%), Mansakonko (37.9%), and Kuntaur (39.9%) satisfied the least FP demands, which is slightly more than the 2015 and 2017 numbers [17–19]. Additionally, these LGAs have the lowest uptake of FP services in the country [20]. In The Gambia, rural women have a somewhat higher unmet demand for FP (25%) than urban women (24%) [18]. At the LGA level, Basse has the largest unmet requirement for FP (30%) while Janjanbureh has the lowest (18%) [18]. Regional variation in The Gambia may be explained by a variety of socioeconomic and cultural characteristics, including religion, ethnicity, cultural traditions, patriarchal cultures in nature, female education, and FP delivery modalities [20, 21]. The Gambia has a total fertility rate (TFR) of 4.8, a general fertility rate (GFR) of 149 per 1000 women between the ages 15-49, a maternal mortality ratio of 289 (confidence interval: 204-375), and a pregnancy-related mortality ratio of 320 (CI: 231-409) per 100,000 live births, with minor differences in rural regions [18]. Only 18.9% of married women use any method of contraception, compared to 17.1% who use modern techniques and 1.8% who utilize traditional methods [18]. Contraceptive use is still relatively infrequent in The Gambia [17, 18, 20, 21].

Generally, there have not been studies on prevalence and determinants of contraceptive use that focus on combining both 2013 and 2019/20 DHS surveys across women in The Gambia. Thus, this paper aimed at exploring the contextual determinants of pooled prevalence of modern contraceptive usage among women of reproductive age in The Gambia.

2. Methods

2.1. Data source

Data from the Gambia Demographic and Health Survey (GDHS) in 2013 and 2019-20 were used for the analysis, a stratified two-stage cluster sampling approach was used to create a population-based sample. Following the probability proportional to the size of the Enumerated Areas (EAs), 281 clusters/EAs were selected in the first stage of both surveys. The second stage involved a methodical selection of 25 households from each cluster/EA. In 2013 and 2019-20, from 281 households 11,279 and 12,481 women aged 15–49 were initially sampled, however, only 10,233 and 11,865 of them were interviewed successfully from 2013 and 2019-20 respectively. This resulted in 91% and 95% response rates which were taken into account for detailed analysis. Interviews with women aged 15 to 49 years old were used to collect data for the study. In The Gambia, through the USAID-funded MEASURE DHS programme, ICF International provided technical and financial assistance to the Ministry of Health in collaboration with the Gambia Bureau of Statistics (GBoS) who implemented the survey.

2.2. Variable selection and measurement

Outcome variables. The study outcome variable was contraceptive use among sexually active women (aged 15-49) excluding pregnant women. This variable was derived from the question "current contraceptive use by method type" in the dataset, the four responses were: "no method", "folkloric method", "traditional method", "modern method". Contraceptive use was recoded into "No contraception =0" for those who do not use any method, "Traditional =1" for those using folkloric and traditional methods and "Modern=2" for those using modern contraceptives.

Explanatory variables. Twenty independent variables were utilized in the study based on a thorough literature review and datasets availability; the variables are listed in Table 1.

2.3. Statistical analysis

The authors conducted a descriptive analysis by calculating the proportion of women using contraceptives (either traditional or modern). The datasets were combined and we calculated women's use of contraceptives by type based on their socio-demographic characteristics. The chi-square test was used to identify the association of modern contraceptive uptake with independent variables. Study variables with p-value <0.05 were included into the model. Lastly, we used multivariable logistic regression model to assess the predictors of contraceptive usage at 95% confidence interval (CIs) with computed adjusted odds ratios (aORs). All the study data were analyzed using IBM SPSS version 25.

2.4. Ethical approval

The datasets used in this research were population-based datasets that are freely available in the public domain. For reasons of confidentiality, specific characteristics that could be used to identify participants in the study were excluded. As a secondary study, MEASURE DHS/ICF International granted the authors permission to use the datasets. Also, prior to the survey, the DHS project gained ethical approval from the Gambia's Research Ethics Committee.

Table 1. Definition of independent variables used in the analysis

Variable	Definition and coding
Age group of respondents	1=15-19; 2=20-24; 3=25-29; 4=30-34; 5=40-44; 6=45-49
Region	1=Banjul; 2=Kanifing; 3=Brikama; 4=Mansakonko; 5=Kerewan; 6=Kuntar; 7=Janjanbureh; 8=Basse
Type of place of residence	1= Urban; 2=Rural
Level of Education	0=No Education; 1=Primary; 2=Secondary; 3=Higher
Religion	1=Islam; 2=Christianity; 3=Others
Ethnicity	1=Mandinka/Jahanka; 2=Wolof; 3=Jola/Karoninka; 4=Fula/Tukulur/Lorobo; 5=Sarere; 6=Sarahule; 7=Creole/Aku; 8=Marabout; 9=Manjago; 10=Bambara; 96=Other; 97=Non-Gambian
Marital Status	0=Not currently married; 1=Currently married/living with partner
Household head	1= Male; 2=Female
Wealth index	1=Poorest; 2=Poorer; 3=Middle; 4=Richer; 5=Richest
Heard family planning on radio last few months	0=No; 1=Yes
Heard family planning on TV last few months	0=No; 1=Yes
Heard family planning in newspaper/maga-zine last few months	0=No; 1=Yes
At health facility, told of family planning	0=No; 1=Yes
Insurance	0=No; 1=Yes
Sexual debut	1=<18; 2=18-24; 25>
Parity	0=0; 1=1-2;2=3-4; 3=5>
Future plans to have a child	More children; undecided; No more children
Women's autonomy in decision making concerning FP	Respondent alone; Husband/partner alone; Joint decision Other
Work Status	0=Not working; 1=Working
Place of delivery	1=Home; 2=Government facility; 3=Private facility; 4=Others
Utilization of family planning services	0=No method; 1=Traditional method; 2=Modern method

3. Results

3.1. Socio-demographic characteristics of reproductive-age women in The Gambia

As shown in Table 2, the mean age (±SD) of women using contraceptives was 32.0 (±7.6). Two-thirds (65%) are married, 44% have no formal education, and half of the women reside in urban areas. More than 97% practice Islam. Just over half of the women (54%) had their sexual debut before 18 years of age and more than 60% have had at least one child. Only 20% were told about FP in the health facility and only 13% do not have a desire for more children. Half of the women claimed to have joint decisions with their partner on contraceptive usage and only 11% of the women used contraceptives.

Table 2. Characteristics of weighted sample population (GDHS 2013-2019/20)

Variables	2013		2019/20		pooled 2013-2019/20	
	n	%	n	%	n	%
Age						
15-19	2324	24.8	2562	23.5	4886	24.1
20-24	1888	20.1	1852	17.0	3740	18.5
25-29	1556	16.6	1939	17.8	3495	17.2
30-34	1319	14.1	1437	13.2	2756	13.6
35-39	998	10.6	1353	12.4	2351	11.6
40-44	732	7.8	1015	9.3	1747	8.6
45-49	564	6.0	732	6.7	1296	6.4
Mean (±SD)	27.3±9.1		28.2±9.3		27.8±9.2	
Region						
Banjul	1011	10.8	898	8.2	1909	9.4
Kanifing	1421	15.1	1522	14.0	2943	14.5
Brikama	1687	18.0	2189	20.1	3876	19.1
Mansakonko	949	10.1	927	8.5	1876	9.3
Kerewan	1321	14.1	1275	11.7	2596	12.8
Kuntar	925	9.9	1162	10.7	2087	10.3
Janjanbureh	931	9.9	1157	10.6	2088	10.3
Basse	1136	12.1	1760	16.2	2896	14.3
Residence						
Urban	4216	44.9	6062	55.7	10278	50.7
Rural	5165	55.1	4828	44.3	9993	49.3
Education						
No education	4555	48.6	4481	41.1	9036	44.6
Primary	1299	13.8	1796	16.5	3095	15.3
Secondary	3102	33.1	4038	37.1	7140	35.2
Higher	425	4.5	575	5.3	1000	4.9
Religion						
Islam	9080	96.9	10625	97.6	19705	97.3
Christianity	287	3.1	262	2.4	549	2.7
Other	3	0.0	2	0.0	5	0.0
Ethnicity						
Mandinka/Jahanka	3072	33.0	3423	35.1	6495	34.1
Wollof	1274	13.7	1547	15.9	2821	14.8
Jola/Karoninka	801	8.6	738	7.6	1539	8.1
Fula/Tukulur/Lorobo	2260	24.3	2336	24.0	4596	24.1
Sarere	355	3.8	349	3.6	704	3.7
Sarahule	679	7.3	1143	10.7	1720	9
Creole/Aku Marabout	87	0.9	1041	0.6	149	0.8
Manjago	136	1.5	62	1.0	237	1.2
Bambara	114	1.2	101	1.5	262	1.4
Others	98	1.1	0	0.0	98	0.5
Non-Gambian	424	4.6	0	0.0	424	2.2
Household head						
Male	7153	76.2	8708	80.0	15861	78.2
Female	2228	23.8	2182	20.0	4410	21.8
Wealth Index						
Poorest	1940	20.7	2997	27.5	4937	24.4
Poorer	2035	21.7	2038	18.7	4073	20.1
Middle	1800	19.2	2078	19.1	3878	19.1

Richer	1594	17.0	1907	17.5	3501	17.3
Richest	2012	21.4	1870	17.2	3882	19.2
Parity						
0	3275	34.9	3801	34.9	7076	34.9
1 - 2	2329	24.8	2547	23.4	4876	24.1
3 - 4	1758	18.7	2131	19.6	3889	19.2
5 & above	2019	21.5	2411	22.1	4430	21.9
Heard FP on radio last few months						
Yes	3177	33.9	2485	22.8	5662	27.9
No	6193	66.1	8405	77.2	14598	72.1
Heard FP on TV last few months						
Yes	1821	19.4	1584	14.5	3405	16.8
No	7548	80.6	9306	85.5	16854	83.2
Heard FP in newspaper/magazine last few months						
Yes	345	3.7	146	1.3	491	2.4
No	9017	3.7	10744	98.7	19761	97.6
Told about FP at health facility						
Yes	736	12.1	1951	26.6	2687	20
No	5349	87.9	5373	73.4	10722	80
Covered by health insurance						
Yes	201	2.1	234	2.1	435	2.1
No	9161	97.9	10656	97.6	19817	97.9
Marital Status						
Not currently married	3299	35.2	3755	34.5	7054	34.8
Currently married/living with partner	6082	64.8	7135	65.5	13217	65.2
Sexual Debut						
Less than 18 years	3498	55.2	4245	54.6	7743	54.9
18 - 24 years	2493	39.3	3150	40.5	5643	40
25 years and above	349	5.5	380	44.9	729	5.2
Desire for more children						
More children	7901	84.7	9041	83.0	16942	83.8
Undecided	233	2.5	271	2.5	504	2.5
No more children	1198	12.8	1578	14.5	2776	13.7
Decision on using Contraception						
Respondent alone	201	37.6	465	33.4	666	34.6
Husband/partner alone	98	18.4	184	13.2	282	14.6
Joint decision	235	44.0	733	52.7	968	50.3
Other	0	0.0	9	0.6	9	0.5
Work Status						
Working	4125	44.1	5576	51.2	9701	47.9
Not working	5230	55.9	5314	48.8	10544	52.1
Place of delivery						
Home	1844	38.6	865	16.8	2709	27.3
Government facility	2864	60.0	4193	81.7	7057	71.2
Private facility	51	1.1	0	0.0	51	0.5
Others	15	0.3	76	1.5	91	0.9
Contraceptive Use						
No method	8697	92.7	9351	85.9	18048	89.0
Traditional method	53	0.6	124	1.1	177	0.9
Modern method	631	6.7	1415	13.0	2046	10.1

3.2. Utilization of contraceptives among Gambian women (GDHS 2013-2019/20)

Over the years, overall contraceptive use increased from 7.3% in 2013 to 14.1% in 2019/20, as shown in Figure 1.

Figure 1: Showing contraceptive use & non-use among women of childbearing change in the Gambia (2013-2019/20)
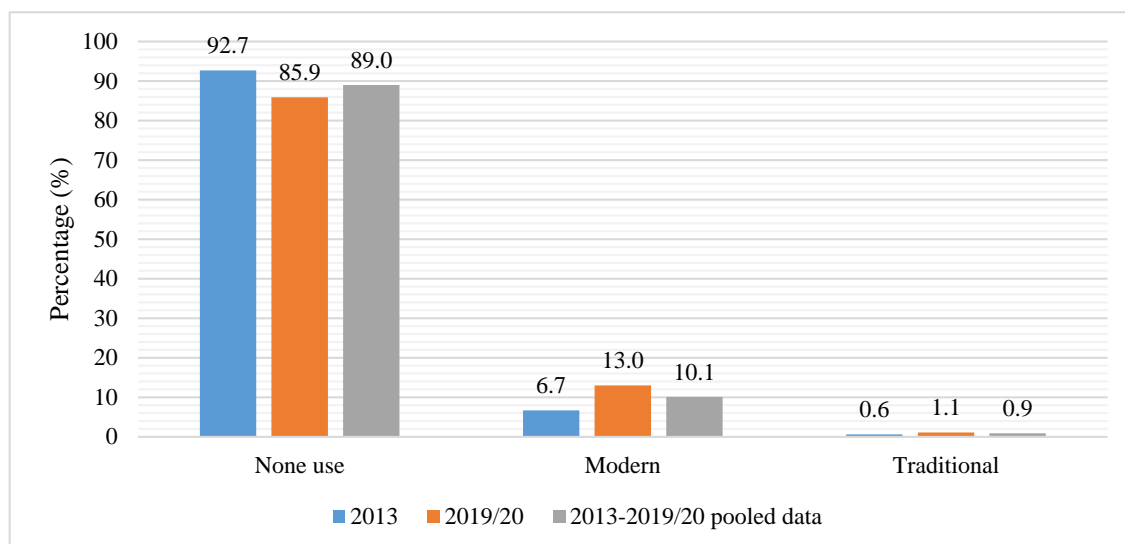

Figure 1. Showing contraceptive use & non-use among women of childbearing change in the Gambia (2013-2019/20)

As shown in Table 3, adolescents (15-19) and younger women (20-24) had lower contraceptive use of 1.3% & 7.8%, respectively, compared with women aged 30-34 and 35-39 with contraceptive use of 18.2% & 18.6%, respectively. Contraceptive use was 14.8% among married women, 13.0% among women with a higher level of education and 12.6% of these women live in urban areas. It was noted that 9.4% of them were in the middle wealth quintile. Contraceptive peaked among those at parity above 5 (19.3%) and those told about family planning at the health facility (31.6%). It was observed that 15.8% of those using contraceptives heard about family planning on the TV while 13.0% heard about family planning on the radio. Also, contraceptive use was high (22.7%) among women who don't desire more children and 19.8% of those who used contraceptives are covered by health insurance.

Table 3. Contraceptive use among Gambia women of childbearing age: 2013-2019/20 pooled data

Variables	Uses Contraceptive		Types of Contraceptive		
	Yes (n)	%	None (%)	Traditional (%)	Modern (%)
Age					
15-19	63	1.3	98.7	0.2	1.1
20-24	290	7.8	92.2	0.9	6.8
25-29	474	13.6	86.4	1.1	12.4
30-34	502	18.2	81.8	1,2	17.0
35-39	437	18.6	81.4	1.4	17.2
40-44	297	17.0	83.0	0.7	16.3
45-49	160	12.3	87.7	1.2	11.2
Region					
Banjul	296	15.5	84.5	0.6	14.9
Kanifing	342	11.6	88.4	0.7	10.9

Brikama	479	12.4	87.6	1.3	11.1
Mansakonko	193	10.3	89.7	0.8	9.5
Kerewan	304	11.7	88.3	0.8	10.9
Kuntaur	209	10.0	90.0	0.9	9.1
Janjanbureh	247	11.8	88.2	1.1	10.7
Basse	153	5.3	94.7	0.6	4.7
Residence					
Urban	1298	12.6	87.4	0.9	11.7
Rural	925	9.3	90.7	0.8	8.4
Education					
No education	1013	11.2	88.8	0.9	10.3
Primary	371	12.0	88.0	1.4	10.6
Secondary	709	9.9	90.1	0.6	9.3
Higher	130	13.0	87.0	1.2	11.8
Religion					
Islam	2135	10.8	89.2	0.8	10.0
Christianity	87	15.8	84.2	1.8	14.0
Other	1	20.0	80.0	0.0	20.0
Ethnicity					
Mandinka/Jahanka	704	10.8	89.2	1.1	9.8
Wolof	364	12.9	87.1	1.3	11.6
Jola/Karoninka	204	13.3	86.7	0.8	12.4
Fula/Tukulur/Lorobo	455	9.9	90.1	0.6	9.3
Sarere	109	15.5	84.5	0.6	14.9
Sarahule	61	3.5	96.5	0.2	3.4
Creole/Aku Marabout	20	13.4	86.8	2.7	10.7
Manjago	39	16.5	83.5	0.0	16.5
Bambara	32	12.2	87.8	0.8	11.5
Other	6	6.1	93.9	0.0	6.1
Non-Gambian	50	11.8	88.2	1.2	10.6
Household head					
Male	1795	11.3	88.7	1.0	10.3
Female	428	9.7	90.3	0.5	9.3
Wealth Index					
Poorest	554	11.2	88.8	1.0	10.2
Poorer	386	9.5	90.5	1.1	8.4
Middle	363	9.4	90.6	0.8	8.6
Richer	442	12.5	87.4	0.8	11.8
Richest	478	12.3	87.7	0.7	11.6
Parity					
0	45	0.6	99.4	0.0	0.6
1 - 2	639	13.3	86.9	1.3	11.8
3 - 4	685	17.6	82.4	1.4	16.2
5 & above	854	19.3	80.7	1.3	18.0
Heard FP on radio last few months					
Yes	735	13.0	89.8	0.8	12.2
No	1488	10.2	89.8	0.9	9.3
Heard FP on TV last few months					
Yes	538	15.8	84.2	0.9	14.9
No	1685	10.0	90.0	0.9	9.1
Heard FP in newspaper/magazine last few months					
Yes	56	11.4	88.6	0.2	11.2

No	2167	11.0	89.0	0.9	10.1
Told about FP at health facility					
Yes	848	31.6	68.4	1.7	29.8
No	1047	9.8	90.2	1.1	8.7
Covered by health insurance					
Yes	84	19.3	80.7	1.8	17.5
No	2139	10.8	89.2	0.9	9.9
Marital Status					
Not currently married	263	3.7	96.3	0.1	3.6
Currently married/living with partner	1960	14.8	85.2	1.3	13.5
Sexual Debut					
Less than 18years	1121	14.5	85.5	1.1	13.4
18 -24years	910	16.1	83.9	1.4	14.7
25 years and above	102	14.0	86.0	1.4	12.6
Desire for more children					
More children	1527	9.0	91.0	0.8	8.2
Undecided	58	11.5	88.5	0.4	11.1
No more children	630	22.7	77.3	1.3	21.4
Work Status					
Working	1428	14.7	85.3	1.2	13.6
Not working	794	7.5	92.5	0.6	6.9
Place of delivery					
Home	268	9.9	90.1	1.1	8.8
Government facility	1470	20.8	79.2	1.7	19.1
Private facility	8	15.7	84.3	3.9	11.8
Others	20	22.0	78.0	3.3	18.7

3.3. Determinants of contraceptive uptake among Gambian reproductive-age women (GDHS 2013 -2019/20)

Predictors of modern contraceptive uptake on pooled data 2013-2019/20

Based on the result from pooled data as shown in Table 4, age was associated with modern contraceptive use, as women aged 25-29 (AOR=1.67, 95% CI= 1.14-2.45), 30-34 (aOR=2.12, 95% CI= 1.41-3.21), 35-39 (aOR=1.91, 95% CI= 1.23-2.94) and 40-44 (aOR=1.89, 95% CI= 1.18-3.05) had higher odds of using modern methods of contraception compared to women less than 24 years old. Furthermore, women living in the urban area had higher odds (aOR=1.49, 95% CI= 1.25-1.79) of using modern contraceptive methods than rural dwellers. Educated women had increased likelihood of using modern contraceptives method compared to women with no formal education. Those at parity two to four had increased odds of using modern contraceptives than those with less than two parities (aOR=1.21, 95% CI= 1.01-1.47). Those told about family planning at the health facility had a higher odds of using modern contraceptives (aOR=2.97, 95% CI= 2.61-3.38). Women who had no future plans for more children had increased likelihood of using modern contraceptives (aOR=1.96, 95% CI= 1.62-2.37) than women with plans for more children.

Predictors of modern contraceptive uptake for GDHS 2019/20 only

Table 4 shows the logistic regression results on the factors associated with modern contraceptives used among Gambia women. In the adjusted model, age was associated with modern contraceptive use, as women aged 30-34 had higher odds (aOR=1.84, 95% CI= 1.13-2.98) of using modern methods of contraception compared to women less than 29 years old. Furthermore, women with secondary education had increased odds

(aOR=1.27, 95% CI= 1.04-1.56) of using modern contraceptive methods than those without education. Those told about family planning at the health facility had a higher odds of using modern contraceptives (aOR=2.31, 95% CI= 1.98-2.69). Women who are married or living with their partner had higher odds (aOR=1.23, 95% CI= 1.06-1.44) of using modern contraceptives than unmarried women. Women who had no future plans for more children had increased odds of using modern contraceptives (aOR=2.11, 95% CI= 1.68-2.66) compared to women with future plans for more children. Finally, women who delivered in government facilities had higher odds (aOR=1.31, 95% CI= 1.06-1.63).

Table 4. Determinants of contraceptive uptake among Gambian reproductive-age women (GDHS 2013 -2019/20)

Variables	GDHS 2013-2019/20 pooled data		GDHS 2019/20 only	
	Traditional vs no contraceptive	Modern vs no contraception	Traditional vs no contraceptive	Modern vs no contraception
	aOR (95%CI)	aOR (95%CI)	aOR (95%CI)	aOR (95%CI)
Age				
15-19	1.00	1.00	1.00	1.00
20-24	1.01(0.49-2.32)	1.49(0.99-2.09)	1.15(0.47-2.82)	1.49(0.97-2.31)
25-29	0.68(0.29-1.59)	1.67(1.14-2.45)*	0.75(0.28-1.97)	1.49(0.95-2.32)
30-34	0.55(0.20-1.47)	2.12(1.41-3.21)*	0.45(0.14-1.42)	1.84(1.13-2.98)*
35-39	0.83(0.29-2.35)	1.91(1.23-2.94)*	0.79(0.24-2.65)	1.53(0.91-2.55)
40-44	0.58(0.17-2.03)	1.89(1.18-3.05)*	0.65(0.15-2.71)	1.55(0.89-2.71)
45-49	0.73(0.17-3.24)	1.61(0.92-2.83)	1.04(0.20-5.28)	1.00(0.51-1.98)
Residence				
Rural (Ref)	1.00	1.00	1.00	1.00
Urban	1.96(1.23-3.13)*	1.49(1.25-1.79)*	1.99(1.14-3.48)*	1.23(0.99-1.54)
Education				
No education (Ref)	1.00	1.00	1.00	1.00
Primary	1.96(1.28-3.01)*	1.25(1.05-1.49)*	1.90(1.12-3.15)*	1.09(0.89-1.35)
Secondary	1.23(0.76-1.98)	1.57(1.32-1.85)*	1.37(0.79-2.36)	1.27(1.04-1.56)*
Higher	2.76(1.15-6.59)*	1.90(1.34-12.69)*	2.81(0.99-7.96)	1.31(0.83-2.09)
Religion				
Christianity	1.00	1.00	1.00	1.00
Islam	0.33(0.13-0.82)*	0.74(0.48-1.13)	0.43(0.12-1.54)	0.63(0.35-1.14)
Wealth Index				
Poorest (Ref)	1.00	1.00	1.00	1.00
Poorer	0.94(0.58-1.52)	0.76(0.63-0.91)*	0.87(0.48-1.56)	0.79(0.64-0.99)*
Middle	0.64(0.36-1.13)	0.74(0.59-0.91)*	0.61(0.30-1.22)	0.82(0.63-1.06)
Richer	0.63(0.33-1.19)	0.89(0.69-1.13)	0.64(0.29-1.39)	1.09(0.81-1.48)
Richest	0.49(0.23-1.06)	0.96(0.74-1.26)	0.42(0.16-1.09)	0.95(0.67-1.34)
Parity				
1-2 (Ref)	1.00	1.00	1.00	1.00
2 - 4	1.38(0.83-2.28)	1.21(1.01-1.47)*	1.32(0.74-2.37)	1.20(0.95-1.52)
5 & above	1.13(0.55-2.35)	1.12(0.89-1.49)	1.24(0.52-2.94)	1.27(0.93-1.74)
Heard FP on radio last few months				
No (Ref)	1.00	1.00	1.00	1.00
Yes	0.82(0.53-1.26)	0.95(0.81-1.09)	1.08(0.66-1.78)	1.07(0.89-1.29)
Heard FP on TV last few months				
No (Ref)	1.00	1.00	1.00	1.00
Yes	0.93(0.53-1.63)	1.19(0.97-1.44)	0.95(0.54-1.93)	1.25(0.99-1.56)
Heard FP in newspaper/magazine last few months				
No (Ref)	1.00	1.00	1.00	1.00

Yes	0.36(0.05-2.76)	1.00(0.64-1.59)		0.74(0.36-1.54)
Told about FP at health facility				
No (Ref)	1.00	1.00	1.00	1.00
Yes	1.48(1.02-2.14)*	2.97(2.61-3.38)*	1.10(0.72-1.68)	2.31(1.98-2.69)*
Covered by health insurance				
No (Ref)	1.00	1.00	1.00	1.00
Yes	2.32(0.95-5.98)	1.29(0.86-1.93)	1.62(0.46-5.70)	1.22(0.71-2.08)
Marital status				
Not currently married (Ref)	1.00	1.00	1.00	1.00
Currently married/living with partner	4.88(1.50-15.65)*	1.01(0.79-1.29)	4.82(1.14-20.39)*	1.23(1.06-1.44)*
Sexual debut				
Less than 18years (Ref)	1.00	1.00	1.00	1.00
18 -24years	1.35(0.91-1.99)	0.97(0.84-1.12)	1.22(0.78-1.94)	0.95(0.80-1.13)
25 years and above	1.00(0.38-2.67)	0.90(0.65-1.26)	1.39(0.47-4.13)	1.29(0.86-1.93)
Desire for more children				
No more children (Ref)	1.00	1.00	1.00	1.00
Undecided	0.49(0.12-2.05)	0.82(0.55-1.22)	0.58(0.14-2.47)	0.82(0.52-1.29)
More children	1.24(0.68-2.28)	1.96(1.62-2.37)*	1.05(0.50-2.21)	2.11(1.68-2.66)*
Work Status				
Not working (Ref)	1.00	1.00	1.00	1.00
Working	1.43(1.03-2.05)*	1.35(1.19-1.54)*	1.18(0.77-1.79)	1.23(1.06-1.44)*
Place of delivery				
Home (Ref)	1.00	1.00	1.00	1.00
Government facility	1.52(0.96-2.42)	1.79(1.51-2.13)*	1.44(0.77-2.72)	1.31(1.06-1.63)*
Private facility	1.77(0.22-14.34)	0.84(0.32-2.25)		-
Others	2.16(0.49-9.49)	2.29(1.26-4.17)*	1.74(0.37-8.09)	1.00(0.72-1.39)

*Ref= Reference category; aOR= adjusted Odds Ratio; *=Statistical significance p<0.05*

4. Discussion

The paper explore the aggregated prevalence of modern contraception use in The Gambia from the 2013 GDHS to the 2019/20 GDHS, to ascertain the contextual determinants of its utilization in order to help in informing policies and intervention prioritization across the country. In the logistic regression analysis, women's age, place of residence, education, parity, household wealth index, having been told about FP at health facilities, desire for more children, work status, and place of delivery were significant determinants of modern contraceptive utilization in The Gambia. This result will assist practitioners and authorities in designing successful ways to increase maternal health service utilization, including contraceptives, especially modern FP methods.

The pooled prevalence of modern contraceptive utilization in The Gambia was 10.1%. Our study showed lower contraceptive uptake which is smaller than previous studies done in The Gambia [20, 21]. The low uptake of modern contraceptives might be due to their health-seeking behavior, higher education status, an obvious source of information, less negative cultural influence towards FP services, and availability of health facilities including hospitals [22, 23]. In The Gambia, modern contraceptives were not widely used. One probable explanation is that cultural and behavioral factors are the primary impediments to contraceptive use among women [24].

The mean age of maternal women was similar to studies done in The Gambia [20, 25] and Nigeria [26, 27]. A more significant proportion of the women were in their prime reproductive years, and contraceptive utilization increased as their age advanced. It was also asserted that as a woman's age progresses, she would achieve the desired family size [28]. Thus, younger women are bound to experience a higher risk of overall unmet need

for FP [29]. More than three-fourths of women had up to secondary education levels and are in contrast with a study done in Osun State, Nigeria on a lower side [30]. There are observed high parities across regions of The Gambia, which could be explained as a result of the Islamic faith being the predominant religion in The Gambia. In addition, rivalry and competition in most polygamous settings might also influence high parity seen as each woman would want to outnumber her counterpart regarding the number of living children she has, the woman's ability to bear children is seen as a stabilizing influence on her marriage and in some Gambian culture, men have to prove their virility by the number of children they have. Male child preference for the families is also a significant determinant for high parity, although it is beyond the focus of this research. Some related studies in the Gambia looks into parental choice regarding son preference [20, 21] and Nigeria, where more women were married [27, 31].

The study revealed that urban settings utilized modern contraceptives more than rural dwellers. These could be attributed to cultural and religious variations as rural communities are culturally disinclined as compared to urban areas [21]. Furthermore, women having been told about FP by health workers at health facilities increases their tendencies toward utilizing modern contraceptives. As part these were shown in this paper, additional barriers such as fear of side effects, male son preference, and cost have been identified as barriers to the use of FP services for poor, rural women in previous studies [20, 21]. In other research, the most common reasons for not using contraceptives were the husband/partner's resistance and the fear of negative effects [21, 32, 33]. Male decision making on women's uptake of contraceptives further justifies the significant role of male involvement and spousal communication, especially in rural settings, regarding the unmet need for FP. However, some studies in SSA have found that use of contraception increases if a woman has previously discussed contraception, been exposed to mass media about FP, or approves of FP [25, 34, 35]. However, this study also shows that the women desire not having many children increases their chances of using modern contraceptives. As a result, despite their wish to limit and space childbirths, women are likely to give birth to additional children since they do not use contraception. Thus, a society that encourages high investment levels per child is essential for receptivity to ideas about family size determination [36].

Strengths and limitations

We employed a nationally representative dataset, ensuring that the study's results can be generalized to Gambia's women of reproductive age. In addition, due to the large sample size, extensive reporting of modern contraception prevalence was possible. However, the studies used cross-sectional data, implying that no causal relationships were determined.

Conclusion

The utilization of modern contraceptives was very low across age groups, rural areas, low/no formal education, low parity, and those with a desire to have more children. The program must consider improvements in the quality of care provided to acceptors. Also, community leaders should be more actively involved in the MCH programme. Government agencies should target these programs and campaigns on regional FP demands and provide suitable culturally sensitive and regionally adaptive services to the communities' contexts. The programme should intensify its efforts in rural and urban settings to improve accessibility to and availability of FP services. Future studies should look into the healthcare systems and service-related factors that prevent women in the Gambia from using modern contraceptives.

Declarations

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Availability of data and materials

Data for this study were sourced from Demographic and Health surveys (DHS) and available here: https://www.dhsprogram.com/data/available-datasets.cfm

Authors' contributions

AB & AA conceptualized the study and prepared the study design, reviewed literature, analysis of data and wrote the results. AB, AA & EMR critically reviewed the manuscript for its intellectual content. AB had final responsibility to submit for publication.

Competing interests

The authors declare that they have no competing interests.

Ethics approval and consent to participate

Ethics approval for this study was not required since the data is secondary and is available in the public domain. More details regarding DHS data and ethical standards are available at: http://goo.gl/ny8T6X.

Consent for publication

No consent to publish was needed for this study as we did not use any details, images or videos related to individual participants. In addition, data used is available in the public domain.

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