

CAIRO DEMOGRAPHIC CENTER



COURSE ASSIGNMENT: STATISTICAL DATA ANALYSIS II

DETERMINANTS OF CONTRACEPTIVE USE IN GAMBIA

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Background:

As the world undergoes a reproductive revolution women differing vastly in culture, politics, and social and economic status have started to desire smaller families. Countries have ensured that family planning, medical and related social services aim not only at the prevention of unwanted pregnancies but also at the elimination of involuntary sterility and sub-fecundity in order that all couples may be permitted to achieve the desired number of children, and that child adoption may be facilitated.

Contraceptive use is one of the four key factors that determine fertility, the other three being involvement in sexual union, postpartum non-susceptibility, and induced abortion (Bongaarts, 1978). Over the past 50 years the world has experienced a contraceptive revolution (Donaldson and Tsui, 1990). Contraceptive prevalence - the percentage of women of reproductive age, married or living in union, that use some type of contraceptive method – has risen from less than 10 percent around the world in the early 1960s to an estimated 55 percent in the late 1980s and early 1990s (Bongaarts et al, 1990; Population Reference Bureau, 1992).

In sub-Saharan Africa where high birth rates is the norm and access to modern contraception was extremely limited prior to 1980 has caused the modern contraceptive use to still remain low. This region was not left behind as developing countries appear to have benefited from the growing influence and scope of family planning programmes from new contraceptive technologies and from the educational power of mass media in the 21st century. Yet, several factors have contributed to this low rate such as difficulty in getting contraceptive supplies, not enough family planning clinics, a largely rural population, low socioeconomic levels, high rates of infant and child mortality, and the high value many cultures placed on large family size.

Research has attested that use of modern contraceptives in sub-Saharan Africa is associated with urban residence and greater education, perhaps indicating that some future changes in the composition of the population might be associated also with increased use.

To attain a balance between resources and population, population policies in the Gambia promote family planning as an entitlement that is based on informed and voluntary choices. Couples are motivated to adopt a family planning method when they are offered access to high-quality reproductive services. Adequate information about methods of contraception enables couples to develop a rational approach to planning their families. The Gambia Demographic and Health Survey (DHS) indicate that only 9 percent of currently married women are using a method of contraception. Contraception covered women's knowledge, history of use, and current use of methods as well as source of modern methods and informed choice.

Objectives of the study:

The primary objective of this research paper is to identify the level of contraceptive use and major determinants of contraceptive use among women of reproductive age in the Gambia.

Literature Review:

It has been empirically established that there is a strong relationship between the socio-demographic factors and the use of contraceptives (Odimegwu 1997; Fotso et al 2011; Adebowale 2013). This study seeks to investigate reported contraceptive use among women within the reproductive age in The Gambia. The 2013 GDHS data is used to examine the relationship between reported use of current method (as dependent variable) and socio-demographic characteristics (highest level of education, marital status, wealth index and area of residence) as independent variables.

This paper discusses the determinants of contraception among current users making a particular reference to the first ever Demographic and Health Survey conducted in The Gambia GDHS. Therefore before now, little research on this topic was done in the country. An attempt to review the general literature in-depth is beyond the limited scope of this study. However, some studies are cited below:

Inside the Gambia:

Margaret et al (2000) conducted a community trial in rural Gambia to determine whether community-based intervention designed to mobilize latent demand for contraception would increase use of modern contraceptives, even in the absence of improved availability of family planning services. Logistic regression analysis was used to assess the effects of the interventions on contraceptive uptake by nonusers, controlling for respondents' background characteristics. The trial data indicates that the demand-mobilization intervention had a statistically significant positive effect on nonusers' adoption of modern contraception and that coterminous implementation of an intervention designed to improve access to services offered no additional benefit. These results suggest that the principal barriers to increased contraceptive use in rural Gambia are psychosocial and that these barriers can be overcome through village-based interventions designed to provide socially appropriate counseling to potential contraceptive users.

Ruth Mace et al (2006) in their study examine first use of modern contraception in four Gambian villages over 25 years period. It specifically examined the determinants of women's age at first use of modern contraceptives from 1975 or from age 15 if younger than that in 1975. It used event history analysis (a logistic regression of yearly probability of first use) to investigate which covariates influenced age at first use. The response variable was a simple dichotomy of use/non-use of modern contraception, and did not distinguish between contraceptive methods in the analysis. Wealth was also significantly related to the probability of contraceptive use, but negatively, with the wealthiest ranked women being the least likely to adopt the innovation.

Outside the Gambia:

Okech (2011) studied Contraceptive Use among Women of Reproductive Age in Kenya's City Slums. The study revealed low usage of contraceptives compared to the national level. The reasons that accounted for this included partner's approval, quality of services, friendliness of the staff administering the services and woman's knowledge about family planning services. Other factors included woman's income level, proximity to the provider and religious background of the woman. The data collected was analyzed first in terms of descriptive statistics to examine the utilization level based on the woman demographic and socioeconomic factors as well as facility/provider factors. Secondly a binomial logistic model was estimated using a two step regression in terms of probability and finally marginal effects. It concluded that, to increase use of family planning services among women in slums, activities of community based distributors should be revived and enhanced as well as promoting family planning education and activities at the household level be accorded priority.

Amin (2014) studied the "Trend and Pattern of Use and Barriers to Family Planning in Egypt". It examines the trends in the level of ever use of family planning among ever-married women during the period 1980-2008 using Egyptian Demographic and Health Survey in 2008. It made use of binary logistic regression model between the dependent and independent variables. It concluded that many Egyptian women are having more births than they consider ideal while the knowledge of family planning methods is universal among currently married women in Egypt. Almost all currently married women 15-49 years knew about the pill, IUD and injectables. Only 6% knew about emergency contraception. Prolonged breastfeeding was the most known method among traditional methods. Various types of barriers were reported for both the discontinued group and non-users among Egyptian women.

Mackfallen and Upendo (2014) conducted a similar study in Tanzania to find out the determinants of contraceptive use among married women in which it made use of the Tanzania Demographic and Health Survey 2004-2005. Quantitative analysis of the data uses binary and multinomial logistic regression showing that husband disapproval of contraceptive use, women education, husband and women approval of family planning, discussion of family planning with partners, wealth index, and religion, are determinants of contraceptive use. The results of the findings recommended increase women enrolment at all levels of education.

Methodology:

This study depends first on a descriptive analysis in which the relationship between current use of contraceptives among women and other background characteristics was investigated using chi-square test.

Furthermore, binary logistic regression model was used in which it considered use of contraceptives (as dependent variable) against some important background characteristics such as area of residence, highest level of education, marital status, and wealth quintiles (as independent variables). This particular model is being used simply because there were only two response categories to the use of contraceptives, i.e. yes or no.

More formally, let y be the binary outcome variable indicating yes/no in contraceptive use with 1/0 and p be the probability of y to be 1, $p = \text{prob}(y=1)$. Let $\mathbf{x}_1, \dots, \mathbf{x}_k$ be a set of predictor variables. Then the logistic regression of y on $\mathbf{x}_1, \dots, \mathbf{x}_k$ estimates parameter values for $\beta_0, \beta_1, \dots, \beta_k$ via maximum likelihood method of the following equation.

$$\text{logit}(p) = \log(p/(1-p)) = \beta_0 + \beta_1 * \mathbf{x}_1 + \dots + \beta_k * \mathbf{x}_k$$

In terms of probabilities, the equation above is translated into

$$p = \exp(\beta_0 + \beta_1 * \mathbf{x}_1 + \dots + \beta_k * \mathbf{x}_k) / (1 + \exp(\beta_0 + \beta_1 * \mathbf{x}_1 + \dots + \beta_k * \mathbf{x}_k)).$$

Data Source:

Primary raw data-set of the Gambia Demographic and Health Survey (DHS 2013) was supplied by ICF macro International for the purpose of this research upon request. The Individual Records (IR) of 10,233 women between the ages of 15-49 in the Gambia was the sample size used.

Results:

1. Background characteristics of sampled women:

According to the 2013 GDHS, the contraceptive prevalence rate was very low in the country. From the sample of women within the reproductive age 15-49 years who participated in the study, about 93 percent of these women were not using any method of contraception at the time of the survey. This translates to show that overall contraceptive prevalence rate in the country is about 7 percent; this could be mainly attributed to under reporting among women who are currently not married and are sexually actively.

The use of injectables was the most prevalent from various component methods. The various component methods were further classified into four basic methods as folkloric method,

traditional method, modern method and no method. Across highest level of education, almost half of the women (about 50 percent) who participated in the study have no education and (about 41 percent) of women using contraceptives also had no education whereas those women with secondary education (about 32 percent) from the sample represented (about 37 percent) of those using contraceptives. According to marital status, majority of women using contraceptives were among those married at about 83 percent representing two-thirds of the sampled women in this category of married.

Across area of residence, contraceptive use was more prevalent in the urban areas at (about 65 percent) than in the rural areas (about 35 percent). According to the wealth quintiles and in terms of the sampled, there is almost a uniform proportion as in (Table 1) below.

Table 1: Proportion of sampled women by type of method and background characteristics

Background characteristics	Percentages	N
Use of contraceptives		
No	93.3	9549
Yes	6.7	684
Contraceptive Methods		
No Method	93.3	9549
Folkloric Method	0.3	28
Traditional Method	0.2	25
Modern Method	6.2	631
Area of residence		
Urban	44.0	4498
Rural	56.0	5735
Highest Educational Level		
No education	49.6	5079
Primary	14.1	1438
Secondary	31.9	3268
Higher	4.4	448
Marital Status		
Never in union	28.0	2866
Married	67.2	6871
Living with partner	0.3	34
Widowed	1.4	141
Divorced	2.6	270
Separated	0.5	51
Wealth quintiles		
Poorest	21.0	2144
Poorer	22.0	2251
Middle	19.5	1991
Richer	16.7	1714
Richest	20.8	2133
Total	100.0	10,233

Table 2: Percentage distribution of contraceptive use by background characteristics

Background characteristics	Use of contraceptives (%)	Non use of contraceptives (%)
Area of Residence*		
Urban	64.6	42.5
Rural	35.4	57.5
Highest Educational Level*		
No education	40.6	50.3
Primary	14.5	14.0
Secondary	36.6	31.6
Higher	8.3	4.1
Marital Status*		
Never in union	8.0	29.4
Married	82.8	66.0
Living with partner	0.4	0.3
Widowed	1.2	1.4
Divorced	6.3	2.4
Separated	1.3	0.4
Wealth quintiles*		
Poorest	13.6	21.5
Poorer	15.4	22.5
Middle	13.7	19.9
Richer	21.3	16.4
Richest	36.0	19.8
Total	100.0	100.0

The results have indicated using chi-square that that there is a significant relationship between contraceptive use and the rest of the predictor variables used above. According to the wealth quintiles it further shows that contraceptive use increases with increase in the wealth of women as in (Table 2) above.

2. Determinants of contraception:

The results of the binary logistic regression indicates that after taking in account the effects of other variables, women in urban areas are more likely to use contraceptives than women in rural areas by 86 percent.

An increase in the use of contraceptives among women with no education increases use among women with primary education, women with secondary education and women with higher education at about 45 percent, 74 percent and 127 percent respectively.

A one unit increase in the use of contraceptives among poorest women causes a decrease of 3 percent among the middle income category and an increase of about 71 percent among the richest. An increase in the use of contraceptives among the never married women in only increase use among the separated at about 6 percent and a decrease of about 6 percent among the divorced and a decrease of about 2 percent among the married and those living with partners. This is consistently with the argument that the never married who are sexually active may not also be reporting about their usage of contraceptives.

Table 3: Determinants of Contraceptive Use by using binary logistic regression

Background Characteristics	S.E.	Sig.	Exp(B)
Area of residence(Urban)*	.135	.000	1.864
Highest level of education*		.000	
Highest level of education(Primary)	.124	.003	1.452
Highest level of education(Secondary)	.102	.000	1.738
Highest level of education(Higher)	.174	.000	2.269
Wealth quintiles**		.004	
Wealth quintiles(Poorer)	.147	.603	1.079
Wealth quintiles(Middle)	.154	.863	.974
Wealth quintiles(Richer)	.171	.106	1.319
Wealth quintiles(Richest)	.174	.002	1.711
Marital status*		.000	
Marital status(Married)	.149	.000	.098
Marital status(Living with partner)	.633	.472	.762
Marital status(Widowed)	.395	.734	.782
Marital status(Divorced)	.219	.091	.412
Marital status(Separated)	.398	.881	1.063
Constant	.186	.000	.006

*significant at 1%;

** Significant at 5%.

Discussion:

It can be concluded that the level of education which in itself has a direct relationship with income/wealth index both have positive impact on the use of contraceptives among women. One of the reasons highlighted by (Okech, 2011) in his study was that women's knowledge lacking about family planning services led to the low usage of contraceptives. Based on this reason it recommended the promotion of family planning education and activities at the household level in Kenya's city slums. This can be encouraged in the case of The Gambia in which almost half of sampled women in the GDHS had no education.

The community-based interventions designed to increase demand for contraception was to increase use of contraceptives as an alternative avenue even in the absence of family planning services. Interestingly, Margaret et al (2000) in their study indicated that the interventions designed to improve access had in fact offered no additional benefit in rural Gambia mainly because of the psycho-social barriers associated with family planning.

Ruth Mace et al (2006) in their study revealed that population differences may reflect differences in levels of aspiration, or in the opportunities available, and hence the returns on parental investment will vary in each population. However, within homogeneous groups, where levels of parental investment were comparable was able to predict a positive relationship between wealth and reproductive success. There is no evidence that women in wealthy (and thus presumably higher status) families were the first to use contraception. On the contrary; if different, they took longer to first use.

Consistent with the findings by Mackfallen and Upendo (2014), wealth index plays an important role in raising the level of contraceptive use among women. The findings of this paper show that the richer the woman is, the more likely they are to use contraceptives than those from poorer groups. This could be attributed to distance and cost attached; limited access to information and privacy; and most importantly strong traditional beliefs and values among poorest groups that are more prevalent in rural areas.

Conclusion:

Since the study seeks to identify the determinants of contraception, thorough knowledge about family planning services would wipe out the psycho-social barriers associated with use of contraceptives as women become highly educated.

Findings of this study have indicated that wealth index is considered to be the most important determinant of contraceptive use. Any future research of the same subject that follows the same methodology will undoubtedly pronounce level of education and wealth index as major determinants.

Therefore, more immediate government and stakeholder efforts are needed to target those poorer groups to raise their awareness on the importance of family planning. Also, long-term strategy geared towards eliminating the gender gap in education will impact on the use of contraceptives.

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